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Female employment and first childbirth in Italy: what news?

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Abstract

In the last decades, female participation in the labour market has been found to be increasingly associated with higher fertility levels in high-income countries—albeit to a lesser extent in countries characterised by poor welfare support to working mothers. Among the latter camp, Italy is an intriguing case study, which is marked by lower female labour force participation and fertility rates when compared to most other European countries. Recent macro-level evidence suggests that a reverse in the female employment/fertility relationship is gradually taking place in Italy, driven largely by the Northern regions. However, the evolution of the relationship between female employment and fertility has (to the best of my knowledge) never been addressed at the micro-level. Through the use of individual-level retrospective data, this study analyses the link between female employment and fertility, paying special attention to differences between Northern and Southern Italy, and its evolution over time. The results suggest that female employment began to be positively associated to fertility at the individual level, both in Northern and Southern Italy (although to slightly different extents), from 2010 onwards.

Keywords: Female employment, Fertility, Italy, Regional differences

Introduction

Employment status has long been considered among the main predictors of fertility in high-income countries. Its importance has grown in recent decades due to massive changes in the labour market, such as the increase in female labour force participation and growing instability in individual employment trajectories. Accordingly, the relationship between female employment and fertility has been studied extensively. On the one hand, macro-level evidence is pervasive and suggests that, while a negative association between female labour force participation and fertility was previously the norm, the trend began to reverse in the mid-1980s in most Western countries (e.g., Engelhardt & Prskawetz, 2004). Since then, we have observed higher fertility rates in countries with larger shares of women in the labour force. If, on the one hand, the relation between female labour force participation and fertility has generally become less negative, Italy is often considered as an exception, as the negative relationship between fertility and participation weakened only slightly (Engelhardt et al., 2004; Kögel, 2004). On the other hand, individual-level evidence signals that relevant differences in the female

employment/fertility nexus exist, and that they largely depend on the particular context analysed.

Micro-level evidence for Italy suggests that employment is not easily compatible with childbearing for women, while men's stable employment is a precondition for having children (e.g., Vignoli et al., 2012). This seems to be an enduring finding. However, there appears to be a lack of evidence based on recent individual data, and, to the best of my knowledge, no study has yet analysed the possibility of a reversal in the female employment/fertility at the micro-level in such an intriguing case study as Italy. Understanding individual behaviour is of the utmost relevance for comprehensively explaining macro-level phenomena (Matysiak & Vignoli, 2012), and improving our knowledge of intricate and changeable relationships, such as that between female employment and fertility. Furthermore, individual-level research has largely disregarded the strong heterogeneity between Italian regions, both in terms of economic development and fertility behaviours (with few exceptions, e.g., Guetto & Panichella, 2013). Typically, Southern regions are more economically disadvantaged, and show lower labour force participation rates and higher levels of unemployment. Nevertheless, historically, fertility rates in the Southern regions were found to be higher than in the Northern and Central regions (Livi Bacci, 1977). Starting from the mid-2000s, fertility trends have slowly begun to reverse, with Northern and Central regions showing higher fertility levels than the Southern regions. However, recent micro-level evidence suggests that female employment still negatively relates to fertility in the country as a whole (e.g., Busetta & Giambalvo, 2014; Tocchioni, 2018). Considering the deep roots of the Italian North/South geographical gradient, analysing the female employment/fertility link separately for the two main macro-areas of the country may reveal patterns that remain 'hidden' when the results are aggregated at the country level, thereby providing new insights with which to disentangle the complex relationship.

Through the use of event-history analysis techniques on recent high-quality retrospective data, I explore the relationship between female employment and fertility in Italy to test: (i) if such relationship has changed over time; and (ii) whether it is homogeneous across macro-areas.

Theoretical perspectives and empirical evidence on female employment and fertility

Different theoretical expectations exist about the relationship between female employment and fertility. The Second Demographic Transition theory (Van de Kaa, 1987; Lesthaeghe, 2020) states that changing values and the reprioritisation of self-realisation lead to a fertility decline in response to improved female economic independence and the increased goal of self-fulfilment. The New Home Economics considers fertility decisions as a function of individual preferences and the cost of children under an income constraint (Becker, 1991). In this framework, female employment may either positively influence fertility through the *income effect*—because the demand for children increases in line with income—or negatively do so through the *substitution effect*. Indeed, when not in the labour force, the opportunity cost of having a child is reduced, and additionally time is available for childbearing and rearing, which in turn may facilitate the decision to have a(nother) child. According to the *role incompatibility* hypothesis (Brewster

& Rindfuss, 2000; Engelhardt et al., 2004), fertility decreases in response to higher female labour force participation rates because of the difficulties of reconciling the demands of childrearing to the requisites of employment. This implies that institutions play a fundamental role in the relationship between employment and fertility to the extent that they may determine the ease with which a woman can combine work and family. In this regard, the gender revolution framework (e.g., Esping-Andersen, 2009; Goldscheider et al., 2015) suggests that a decrease in fertility levels is expected in response to rising female labour force participation—at least initially, as women may well be forced to choose between employment and childbearing. However, as male involvement in the home and family increases, and the transition towards a more gender-symmetric family model occurs, there should be positive implications on fertility.

Empirically speaking, a negative correlation between female employment and fertility was the norm in high-income countries during the 1960s and '70s. However, a reverse in this relationship was observed at the macro-level starting from the mid-1980s (e.g., Brewster & Rindfuss, 2000). In fact, since then, higher fertility rates were observed in countries with higher female labour force participation rates. Some authors have suggested that this could possibly have been due to the weakening of the work–family conflict for women in some countries thanks to institutional changes, such as the introduction of policies to reconcile work and family (Castles, 2003; Rindfuss et al., 2003). Other studies have suggested that the reverse observed in the cross-country correlation between fertility and female labour force participation did not correspond to an actual change in the causal association, but was rather caused by exogenous factors affecting both variables (e.g., Engelhardt et al., 2004; Kögel, 2004). However, it is now an established fact that institutions play a fundamental role in the relationship between female employment and fertility, and that latter responds positively to an increase in the former, especially in countries where childbearing is supported by institutions promoting work–motherhood reconciliation and by gender-equitable attitudes within couples (Ahn & Mira, 2002; Arpino et al., 2015; Del Boca & Wetzels, 2007; Luci & Thévenon, 2010).

Empirical evidence at the individual level confirms that labour market participation is associated with fertility to different extents depending on gender and context. In their meta-analysis, Matysiak and Vignoli (2008) found that employment is generally related to higher chances of childbearing among men, while the relationship between labour force participation and childbearing is heterogeneous among women. Indeed, the incompatibility between employment and fertility is lowest in countries where institutions support working mothers (typically social-democratic and socialist welfare regimes), while it becomes higher in countries with familistic welfare regimes (i.e. in Southern Europe), characterised by rigid labour markets and scarce support to working parents. A remarkable variability in the relationship between employment instability and fertility by gender and welfare state was also the main finding of Alderotti et al.'s (2021) recent meta-analysis on the link between employment instability and fertility. Moreover, other studies have suggested that gender equality plays a key role in the relationship between employment and fertility (see, e.g., Balbo et al., 2013). Through comparing two different contexts, namely Italy and the Netherlands, Mills et al. (2008) found that, especially in Italy, unequal housework division within couples reduces working women's fertility (intentions). In sum, micro-level evidence confirms that the relationship between

female employment and fertility must be analysed while paying ample consideration to the characteristics of single countries.

Despite the fact that higher fertility rates are generally registered in countries with greater female labour force participation, it should be noted that several individual-level analyses on female employment and fertility indicate that experiencing spells of non-employment positively affects the probability of having a(nother) child. For example, studying Belgium, Wood and Neels (2017) found that women are more likely to have a child during spells of unemployment or inactivity if they have limited labour market opportunities (as could be the case for low-educated women). Similarly, Schmitt (2012) found that unemployment favours transition to motherhood in Germany and the UK. The positive relationship between non-employment and fertility could be explained by the aforementioned substitution effect. The substitution effect particularly applies to first births because of the general social norm against remaining childless (Kravdal, 1994).

The next section discusses existing studies about the employment/fertility nexus for Italy, together with the peculiarities of the national context.

Italy and its geographical gradient

Traditionally, Northern and Southern Italy differ in terms of their economic and institutional conditions, and for the prevailing preferences towards family (Rondinelli et al., 2010). More specifically, Italy has always been characterised by a dualistic model in which Northern and Central regions are more economically advanced and have lower levels of fertility, with the reverse being true for the Southern regions. In the following paragraph, I will introduce the main differences between the Northern and the Southern contexts in terms of female labour force participation and fertility behaviours.

In terms of female employment, Italy is generally characterised by low labour force participation rates. The 'partial and targeted' (Barbieri & Scherer, 2009; Esping-Andersen & Regini, 2000) labour market deregulation that occurred in Italy from the late-1980s was aimed at improving labour market entrants' employability—including those of women. However, the positive consequences of the reforms were limited to a brief 'honeymoon effect' (Barbieri & Cutuli, 2016). Despite female employment rates having increased over the last decades (from 35.1% in 1980 to 48.1% in 2016), and the remarkable reduction of the employment gender gap among the younger generations of Italians (Leon & Migliavacca, 2013), the percentage of working women remains relatively low compared to most other European countries, and is even smaller among mothers. However, notable differences exist between the Northern and Central regions and the Southern regions. As shown in panel a of Fig. 1, the increase in female employment rates at the national level was driven by the Northern and Central regions, where female employment rates almost reached 60% in the recent years, while remained floating at roughly 30% in the Southern regions. This is reflected in the diffusion of attitudes towards gender equality, which are more widespread among the Northerners (Menniti et al., 2015). The geographical gradient also applies to fertility. As shown in panel b of Fig. 1, Southern regions have typically showed higher fertility rates compared to Northern regions. However, as fertility reduced at the national level, this gap narrowed, and starting from the mid-2000s, higher fertility rates were observed in the Northern regions. This reversal

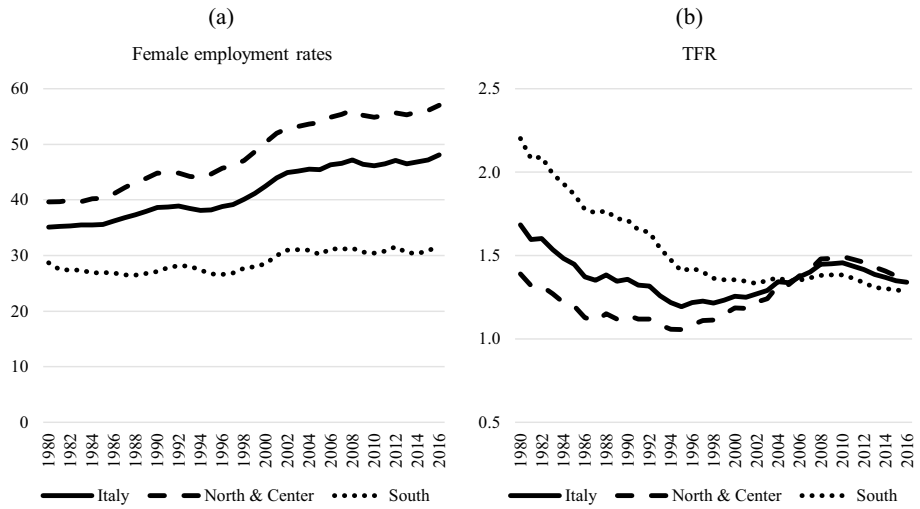

Fig. 1 Female employment rates (**a**) and total fertility rates (**b**) by macro-area, Italy, 1980–2016. Source: Author's elaboration on ISTAT data

in regional fertility trends was analysed by Vitali and Billari (2017), who found that the (slow) recovery of national-level fertility during the 2000s (i.e. after the lowest-low fertility of the 1990s) was driven by the Northern regions. Additionally, the authors studied the relationship between several indicators (e.g., GDP, secularisation) and the total fertility rate (TFR) at the regional level, and noticed that such relationships change depending on the context. In particular, they showed that the relationship between the labour market gender gap[1] and TFR was negative until 2010, but then became positive only in Northern Italy. Salvati et al. (2020) also found different macro-level fertility responses to economic expansion and recession between Northern and Southern Italy. In the same vein, Mencarini and Vignoli (2018) examined the regional-level correlation between the employment rates of women aged between 20 and 64 and the TFR, and identified a positive relationship in the Northern and Central regions, which tend to be characterised by better chances of work–family reconciliation and by a more family-friendly institutional context. However, the authors noted a negative relationship in Southern regions, suggesting that while the reversal in the female employment/fertility relationship did also occur in Italy, it remains incomplete. This makes the Northern regions of Italy more similar to some Northern European countries (e.g., Germany), albeit still far from Scandinavian countries, possibly thanks to the easier combination of work and childbearing (e.g., through more widespread part-time work and childcare facilities) with respect to other areas of the country.

Other macro-level studies about the employment/fertility link have confirmed the above. For example, Zambon et al. (2020) showed that regional fertility levels in Italy are closely related to economic trends, with Northern regions leading the national fertility recovery of the 2000s (also thanks to the contribution of migrants, who tend to have

[1] Computed as one minus the proportion of working women aged between 15–64, relative to the same proportion calculated for men, multiplied by 100.

higher fertility rates than natives, see Caltabiano et al., 2009). Moreover, Cazzola et al. (2016) found that the relationship between unemployment rate and TFR is negative only in the Northern and Central regions, especially among men.

In sum, macro-level evidence about the relationship between female employment and fertility in Italy suggests that such relationship may have only recently reversed and only in certain regions. However, this aspect has not been investigated at the micro-level. Despite the fact that evidence on this topic for the Italian case is available, most studies rely on data collected in 2009—which could be considered relatively old—and no attention has yet been paid towards a potential reverse in the female employment/fertility nexus.

Individual-level evidence about the relationship between employment and fertility in Italy shows that the employment condition of men plays the most prominent role in shaping reproductive decisions, and that women's employment may in fact hamper fertility. For example, Santarelli (2011) showed that, in Italy, couples wherein only the man works have higher chances of having a first child, while working women have lower chances of becoming mothers compared to their employed counterparts. Similarly, Busetta and Giambalvo (2014) found that, for Italian women, being employed represents a risk factor for the postponement of first births. Vignoli et al. (2012) found that an increase in the income of one of the members of a couple leads to higher probabilities of having the first child, although this effect is stronger if the man's income increases. Similarly, Vignoli et al. (2020) found that a deterioration in men's (but not women's) labour position was associated with negative fertility intentions during the Great Recession. Tocchioni (2018) identified the typical life course trajectories of childless men and women in Italy and found that childless women are more likely to participate in the labour market, while the opposite holds for men.

Finally, it should be noted that individual-level studies mentioned thus far about the employment/fertility nexus in Italy tended to underemphasise the strong regional differences that characterise the country both from an economic and demographic point of view. Among the few exceptions, Guetto and Panichella (2013) studied North–South differences in the transition to the first child, and concluded that they can be explained by different patterns of female labour market participation. They also showed that preferences may impact the transition to the second child, where migrants and Southerners tend to be faster than Northerners. Due to how North–South differences in Italy have been proven to be non-negligible, I will explore the micro-level relationship between female employment and fertility separately by macro-regions.

Data and methods

I used data from the Italian survey 'Family and Social Subjects' (FSS) conducted by ISTAT in 2016, which was the most up-to-date survey available for the analysis of this study. The survey includes retrospective information about respondents' occupational and fertility histories, with monthly detail. This inclusion allowed me to analyse the relationship between employment conditions and fertility during individual life courses with event-history analysis (EHA) techniques. Women born before 1950 were excluded from the analytical sample in order to reduce the level of heterogeneity due to birth cohort. Accordingly, the sample includes women born between 1950 and 1998 (the youngest

cohort available in the survey), resulting in an initial sample of 9469 women. Moreover, observations with missing information for the main variables of interest (i.e. number and birth dates of children, employment history) were dropped. The final sample includes 9327 women.

I set the respondents' time-varying employment status, which distinguishes between employed and non-employed women, as the main independent variable. This variable was measured nine months in advance so as to represent the respondents' employment status at the time of conception. In terms of regional differences, I used a dichotomous variable to divide Northern and Central regions (Valle d'Aosta, Piemonte, Liguria, Trento province, Bolzano province, Lombardia, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Toscana, Umbria, Lazio, Marche, and Abruzzo) from Southern regions (Campania, Calabria, Molise, Puglia, Basilicata, Sicilia, and Sardegna). Distinguishing between Northern, Central, and Southern region—as is usually done for the Italian context—was not possible due to the reduced sample size of the Central regions. Accordingly, I grouped the Northern and Central regions together because of their similarity in terms of fertility and female employment rates—especially when compared to the Southern regions. Moreover, it should be noted that the variable about the macro-area was based on the region of residence at the time of the interview (information about previous places of residence was unavailable in the survey), while the employment and fertility transitions were observed retrospectively with respect to the time of the interview. This may have introduced selection issues, as some women may have been living in a certain macro-area at the time of the interview while having had employment spells and/or their first childbirth in another. To correct for the impossibility of controlling for the time-varying macro-area of residence, I exploited the information concerning the province of residence during each employment spell and introduced a binary control variable indicating who had an employment spell of longer than 6 months[2] before their first childbirth in the macro-area opposite to their current (at the time of interview) area of residence. This control variable did not capture all internal movements from Southern regions to Northern ones (or vice-versa), but only those related to the respondents' job changes. The limitations resulting from this selection issue and the related robustness checks are further discussed in the concluding section.

The remaining control variables were the time-varying respondents' educational levels (1 'still studying', 2 'up to lower secondary', 3 'upper secondary', 4 'tertiary'), the time-varying calendar period (1 'before 1980', 2 '1980–1989', 3 '1990–1999', 4 '2000–2009', 5 '2010–2016'), the educational level of the respondents' parents (the highest between the two, or the only one available; 1 'primary', 2 'lower secondary', 3 'upper secondary or tertiary'); the region of residence at the time of the interview; the place of birth (1 'Italy', 2 'abroad'). It was not possible to separately investigate the potential differences in the employment/fertility link between natives and migrants (e.g., Wood & Neels, 2017) due to the small sample size. However, I conducted a robustness check on native women

[2] Employment spells of 6 months or shorter were disregarded as they may not have entailed a change in the place of residence. I conducted robustness checks by considering only employment spells of longer than 3 and 12 months, and the results remain unchanged.

only, and the results—which substantially confirm the main findings—are mentioned in the conclusions.

I studied the relationship between female employment and fertility by using EHA techniques. In particular, I relied on a Cox model specification (Cox, 1972) to study the transition to the first child separately by macro-area. Women enter the observation upon turning 16 and exit when they experience the event of interest or when turn 50. First, in order to identify North–South differences in the female employment/fertility relationship, I ran Cox models for the transition to motherhood on the whole dataset and then separately by macro-area. Second, I added an interaction term between employment status and calendar year so as to examine how the relationship between female employment and transition to motherhood has changed over time. The results are reported in terms of hazard ratios (HRs).

Results

During the first set of analysis, I examined the relationship between being employed and the transition to motherhood separately at the national level, and then specifically by macro-area. The full models are reported in Table 1. As can be seen from the results, the calendar time variable is always highly significant, which confirms the shift towards a postponement of the first birth with respect to the 'pre-deregulation' period both in Northern and Southern Italy. Regarding parental education, the daughters of highly educated parents tend to have their first child later than the others (HR = 0.803 at the country level, HR = 0.827 and HR = 0.753 for Northern and Southern Italy, respectively). Interestingly, the control for the macro-area of residence (i.e. Northern/Central vs. Southern Italy) in the whole country model is not significant. Foreign-born women show a higher probability of transition to motherhood than native women (HR = 1.345), albeit such effect is significant only in Northern Italy (HR = 1.473), whereas it is close to one for Southern Italy (HR = 1.071). The control for internal migration signals that women who have ever migrated (i.e. those who have worked for at least six months in a macro-area different from the one in which they live) show a slightly lower probability of transition to motherhood, especially in Southern Italy (HR = 0.759). In terms of educational level, I found the lowest chance of having the first child to be among women still enrolled in education, as expected. With respect to women with upper secondary education, those with a lower education show higher probabilities of transition to motherhood in all models, while having achieved tertiary education is weakly positively associated with the chance of having the first child only in the Southern regions (HR = 1.149). Finally, the main explanatory variable (employment) indicates that being employed is not significantly related to the risk of transition to motherhood at the country level and in the Northern regions (HR = 0.988 and HR = 1.022, respectively), but weakly negatively associated in the Southern regions (HR = 0.949).

Thus far, the results seem to suggest that the relationship between employment and transition to motherhood is rather negligible. However, this could be the result of opposing trends in different calendar periods nullifying each other. In Table 2, I added an interaction term between the employment and calendar time variables in order to investigate whether the relationship between employment and transition to motherhood has changed over time. For sake of simplicity, Table 2 shows only the HRs relative to

Table 1 Employment status and transition to motherhood. Cox models, HRs are reported with standard errors in brackets

	Italy (whole country)		Northern/Central Italy		Southern Italy	
	HR (std. error)		HR (std. error)		HR (std. error)	
Calendar time (ref. before 1980)						
1980–1989	0.621 (0.026)	***	0.557 (0.031)	***	0.721 (0.047)	***
1990–1999	0.434 (0.019)	***	0.401 (0.023)	***	0.481 (0.034)	***
2000–2009	0.454 (0.021)	***	0.452 (0.027)	***	0.443 (0.033)	***
2010–2016	0.427 (0.024)	***	0.433 (0.032)	***	0.415 (0.038)	***
Parental education (ref. primary)						
Lower secondary	0.882 (0.029)	***	0.901 (0.038)	**	0.851 (0.047)	***
Upper secondary/tertiary	0.803 (0.032)	***	0.827 (0.041)	***	0.753 (0.053)	***
Area of resid. (ref. North/Centre)						
South	1.033 (0.029)					
Place of birth (ref. Italy)						
Foreign country	1.345 (0.053)	***	1.473 (0.068)	***	1.071 (0.082)	
Ever migrated (ref. no)						
Yes	0.860 (0.079)	*	0.955 (0.118)		0.759 (0.107)	*
Education (ref. upper secondary)						
Still studying	0.324 (0.017)	***	0.312 (0.022)	***	0.352 (0.029)	***
Up to lower secondary	1.233 (0.039)	***	1.245 (0.051)	***	1.226 (0.062)	***
Tertiary	1.026 (0.044)		0.955 (0.049)		1.149 (0.087)	*
Employment (ref. not employed)						
Employed	0.988 (0.028)		1.022 (0.048)		0.949 (0.033)	*

Source: Author's elaboration on FSS 2016 data

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. Sample sizes: Italy = 9327; Northern/Central Italy = 5669; Southern Italy = 3658

employment, calendar time, and their interaction. However, the models include the same control variables shown in Table 1, and their coefficients remain virtually unchanged (see Table 3 in Appendix for the full models). The results thus suggest that the relationship between employment and transition to motherhood has changed over time. The HRs referring to the main terms of the employment variable are smaller than one, suggesting a negative association between employment and fertility before the 1980s (although not significant in the Southern regions), and the calendar time variable indicates—as expected—that the likelihood of having the first child decreases over time. However, the interaction terms are always positive and mostly significant at the country level and in the Northern regions, which translates into a modification of the employment/fertility link over time. In the first model, namely the one for the whole country, the HRs of the interaction terms become larger by decade and are already highly significant from the

Table 2 Employment status and transition to motherhood over time. Cox models, HRs are reported with standard errors in brackets

	Italy (whole country)		Northern/Central Italy		Southern Italy	
	HR (std. error)		HR (std. error)		HR (std. error)	
Employed (ref. not employed)	0.833 (0.052)	***	0.835 (0.066)	**	0.865 (0.101)	
Calendar time (ref. before 1980)						
1980–1989	0.598 (0.033)	***	0.508 (0.042)	***	0.698 (0.052)	***
1990–1999	0.401 (0.023)	***	0.365 (0.031)	***	0.454 (0.037)	***
2000–2009	0.397 (0.025)	***	0.393 (0.036)	***	0.428 (0.037)	***
2010–2016	0.343 (0.028)	***	0.364 (0.044)	***	0.360 (0.040)	***
Employed * 1980–1989	1.101 (0.089)		1.180 (0.109)	*	1.141 (0.169)	
Employed * 1990–1999	1.201 (0.098)	**	1.186 (0.125)	*	1.238 (0.184)	
Employed * 2000–2009	1.319 (0.108)	***	1.268 (0.136)	**	1.637 (0.304)	
Employed * 2010–2016	1.501 (0.153)	***	1.322 (0.184)	**	1.481 (0.253)	**

Models control for parents' education, place of birth, having ever migrated, respondents' education

Source: Author's elaboration on FSS 2016 data

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. Sample sizes are the same as those in Table 1

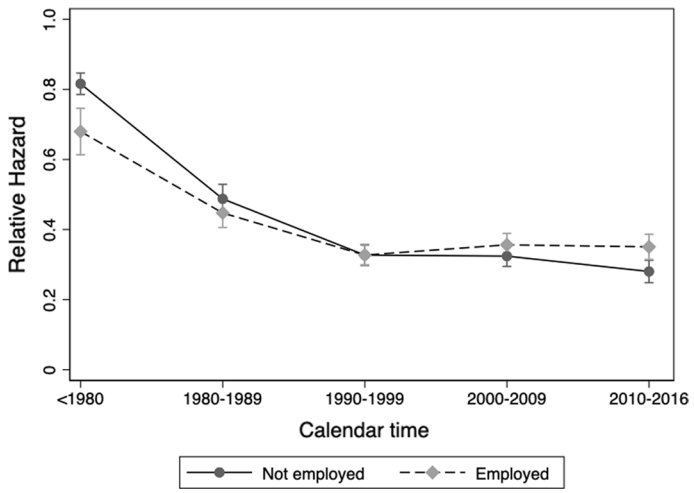

Fig. 2 Relative hazard of transition to motherhood over time for employed and non-employed women, Italy. Source: Author's elaboration on FSS 2016 data

1990–1999 time slot (HR = 1.201). Moreover, the models by macro-area tell two slightly different stories about how the employment/fertility link has changed over time: first, the interaction terms are always significant for the Northern and Central regions and; second, only the interaction between employment and the 2010–2016 time slot is significant for the Southern regions (HR = 1.481).

Finally, Fig. 2 shows the predicted relative hazard of transition to motherhood from Table 2's model for working and non-working women during each time interval considered in the analysis, with confidence intervals for pair-wise comparisons (5% significance level; see Goldstein & Healy, 1995[3]). While the relative hazard of motherhood was

[3] Following Goldstein and Healy (1995), to have an average level of 5% for Type 1 error in pair-wise comparisons of a group of means, intervals should be centred on the prediction and have lengths equal to 2×1.39 x standard errors (see Bellani et al., 2021 for a similar application).

significantly higher for non-working women before the 1980s, this difference began to narrow in the 1990s, and reversed in the last time interval (2010–2016) with working women being more likely to have their first child compared to non-working women. The figure relates to the model performed on the whole country. Unfortunately, due to the small sample size, figures specific to macro-area are not informative because of the low statistical precision.

Conclusion

Macro-level research has intensively analysed the relationship between female labour force participation and fertility in high-income countries. It has been widely established that such a relation was typically negative before the 1980s, but then began to reverse due to (in large part) country-specific factors. Female employment has typically been associated with lower fertility in Italy, and the first signs of a reversal in this trend are relatively recent (Vitali & Billari, 2017). This paper contributes to the research on the relationship between female employment and fertility in Italy by shifting to a micro-level perspective, and investigating whether and to what extent being employed (still) hampers transition to motherhood.

The results suggest that, on average, the relationship between female employment and transition to motherhood is still slightly negative in Italy, but separate analyses by macro-areas show that this effect is driven by the Southern regions. Nevertheless, when examining how the micro-level relationship between employment status and transition to motherhood has changed over time, a reversal in the trend becomes clear: the relationship between employment and fertility (or at least, transition to motherhood) has turned and become positive in recent years (i.e. starting from 2010). Furthermore, analyses by macro-area support macro-level findings about the Northern regions being the driver of the change in the employment/fertility nexus, but they also suggest that Southern regions are catching up: the Southern trend reversal may have not started as soon as in the Northern regions, but the results of this study indicate that they are no longer lagging behind. In fact, in light of the magnitude and the deep roots of Italy's North–South gradient, one could say that the results for the Northern and Southern regions are not as diverse as could be expected, and that a North–South convergence in the employment/fertility relationship might well be underway.

Bearing in mind that male labour market participation is the norm in Italy, these findings suggest that the dual earner model is becoming increasingly widespread in the country and starting to be positively associated to fertility. This is possibly a result of the strong increase in educational attainment and labour market participation of women in the last decades, despite the institutional and cultural framework's slow adaptation to this (not so) new context (De Rose et al., 2008). Nevertheless, this cannot be directly tested with the data used in this study because of the unavailability of the information concerning partner's employment. However, identifying the cause(s) of the change in the sign of the correlation between female employment and fertility in Italy is far from

straightforward. Considering the results of this study, one may posit that increasing female labour participation does not increase fertility levels through the income effect, since this effect would be especially visible in the economically disadvantaged Southern regions. Rather, the results of this study are in line with the gender revolution framework, which involves positive effects on fertility in response to the diffusion of 'new' gender roles in Italy initially adopted in the Northern regions. As shown by Menniti et al. (2015), the male contribution to housework and childcare is in fact lower in the Southern regions, which supports the prevalence of less-stereotyped gender behaviours among men living in Northern Italy. New gender roles may entail gender-equitable attitudes within couples, which ease reconciling work and family life, thus allowing a positive effect of female labour force participation on fertility (Esping-Andersen, 2009; Goldsheider et al., 2015). This explanation is in line with other studies about Italy, which have found that women's employment has a negative effect on union stability only if men do not contribute to housework (Mencarini & Vignoli, 2018), and that women's high domestic burdens depress their fertility intentions (Patimo et al., 2021). Finally, this study provides evidence supporting—for the first time at the micro-level—the reversal in the female employment/fertility nexus that was recently observed at the macro-level in Italy. This also aligns with previous studies (e.g., Vitali & Billari, 2017) that have identified the Northern regions as driving this change.

This study contains certain limitations. First, it was not possible to split non-employment spells into unemployment and inactivity. Consequently, the effect of employment on transition to motherhood was always expressed as opposed to being not employed. Being unemployed or inactive may have different meanings in the framework of this study, as unemployed women are part of the labour force, whereas inactive women are most probably housewives who have never entered (or who have left) the labour market. Moreover, the category of non-employed women is likely to have changed its composition across time and macro-areas, as an increasing number of women entered the labour market and moved from inactive to unemployed—especially in the Northern regions. However, the compositional change in the 'non-employment' category may not be as drastic as to compromise the validity of the results. In fact, despite female labour force participation has significantly increased over the last decades, the female inactivity rate has reduced 'only' from approximately 60% in 1980s to roughly 48% in the 2010s—which suggests that most non-employment spells may relate to inactivity rather than to unemployment in recent years also. Moreover, being unemployed or economically inactive have similar social and demographic consequences on individuals because the central point is whether a person is employed or not; thus, non-employment may be even more significant to fertility than unemployment (Härkönen, 2011). Additionally, unemployment does not include those who have worked illegally (or are looking to do so). For these reasons, several fertility studies have already considered non-employment (or joblessness) rather than unemployment (e.g., Busetta et al., 2019; Clasen et al., 2006). Second, the macro-area of residence was measured at the time of the survey, while fertility behaviours

and employment histories were based on retrospective information. This may have introduced some bias in the analysis. The control for internal migration added to the model can only partially account for this mismatch between region of birth and region of residence; nevertheless, it does not signal any significant interplay. In this regard, Guetto and Panichella (2013) confirmed that migrants' fertility behaviours differ from those of non-migrants, especially in terms of timing, with migrants making slower transitions to the first child compared to Southerners. To prove the validity of my findings, I replicated the analyses excluding all women who have ever worked for more than six months in the macro-area opposite to the area in which they lived at the time of the interview. The results remain mostly unchanged and are reported in the Appendix (see Tables 4, 5). Third, it was not possible to control for the partner's employment status, since information about the partner was available only at the time of the interview and not at the time of the childbirth. Moreover, the sample size did not allow a more refined analysis by macro-areas, i.e. analysing Northern, Central, and Southern Italy separately, which would have provided better insights about heterogeneity among Italian regions. Considering that Central regions fall between Northern and Southern regions both in terms of fertility and female employment rates (despite resembling the North more closely than the South), the results of the models in which Northern and Central regions are grouped together refer to effects 'averaged' across the two macro-areas, possibly obscuring further regional heterogeneity.

As an additional robustness check, I repeated the analysis only on native women, because—as anticipated earlier in the paper—the mechanisms linking female employment and fertility may differ between native and migrant women (e.g., Alderotti et al., 2021; Wood & Neels, 2017). The results confirm the findings discussed in the previous section, suggesting that the reversal in the employment/fertility link might be even more evident when considering only native women (see Tables 6, 7 in Appendix). Moreover, I repeated the analyses changing the sample selection on cohorts, namely by excluding women born before 1960 and those born after 1995, and the findings still hold—albeit the statistical precision is reduced due to the smaller sample size (results available on request). Finally, I attempted to include a control for union status in all models, and, unsurprisingly, the magnitude of the effects of employment on transition to motherhood reduced (see Tables 8, 9 in Appendix). However, the direction of the effects remains unchanged, despite a reduction to the statistical significance in most cases.

To conclude, this study provides the first insight towards a reversal in the micro-level relationship between employment and transition to motherhood in Italy, completing the existing macro-level evidence on the topic. Moreover, it stresses the importance of taking variations by macro-areas into consideration, which adds a relevant heterogeneity dimension to the debate about fertility trends in Italy.

Appendix

See Tables 3, 4, 5, 6, 7, 8, 9.

Table 3 Employment status and transition to motherhood over time. Cox models, HRs are reported with standard errors in brackets

	Italy (whole country)		Northern/Central Italy		Southern Italy	
	HR (std. error)		HR (std. error)		HR (std. error)	
Parental education (ref. primary)						
Lower secondary	0.879 (0.029)	***	0.898 (0.038)	**	0.851 (0.047)	***
Upper secondary / tertiary	0.803 (0.032)	***	0.827 (0.041)	***	0.754 (0.054)	***
Area of resid. (ref. North/Centre)						
South	1.032 (0.029)					
Place of birth (ref. Italy)						
Foreign country	1.343 (0.053)	***	1.475 (0.068)	***	1.072 (0.082)	
Ever migrated (ref. no)						
Yes	0.858 (0.080)	*	0.955 (0.118)		0.761 (0.108)	*
Education (ref. upper secondary)						
Still studying	0.327 (0.017)	***	0.313 (0.022)	***	0.355 (0.029)	***
Up to lower secondary	1.238 (0.039)	***	1.250 (0.051)	***	1.229 (0.062)	***
Tertiary	1.019 (0.044)		0.955 (0.049)		1.140 (0.086)	*
Employed (ref. not employed)	0.833 (0.052)	***	0.835 (0.066)	**	0.865 (0.101)	
Calendar time (ref. before 1980)						
1980–1989	0.598 (0.033)	***	0.508 (0.042)	***	0.698 (0.052)	***
1990–1999	0.401 (0.023)	***	0.365 (0.031)	***	0.454 (0.037)	***
2000–2009	0.397 (0.025)	***	0.393 (0.036)	***	0.428 (0.037)	***
2010–2016	0.343 (0.028)	***	0.364 (0.044)	***	0.360 (0.040)	***
Employed * 1980–89	1.101 (0.089)		1.180 (0.109)	*	1.141 (0.169)	
Employed * 1990–99	1.201 (0.098)	**	1.186 (0.125)	*	1.238 (0.184)	
Employed * 2000–09	1.319 (0.108)	***	1.268 (0.136)	**	1.637 (0.304)	
Employed * 2010–16	1.501 (0.153)	***	1.322 (0.184)	**	1.481 (0.253)	**

Source: Author's elaboration on FSS 2016 data

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. Sample sizes are the same as in Table 1.

Table 4 Employment status and transition to motherhood, only women who have never worked for more than 6 months in the macro-area opposite to that they live in at the time of the interview. Cox models, HRs are reported with standard errors in brackets

	Italy (whole country)		Northern/Central Italy		Southern Italy	
	HR (std. error)		HR (std. error)		HR (std. error)	
Calendar time (ref. before 1980)						
1980–1989	0.623 (0.026)	***	0.555 (0.031)	***	0.731 (0.048)	***
1990–1999	0.433 (0.019)	***	0.398 (0.023)	***	0.483 (0.034)	***
2000–2009	0.457 (0.022)	***	0.447 (0.027)	***	0.457 (0.035)	***
2010–2016	0.422 (0.024)	***	0.421 (0.031)	***	0.416 (0.038)	***
Parental education (ref. primary)						
Lower secondary	0.883 (0.030)	***	0.898 (0.038)	**	0.854 (0.047)	***
Upper secondary/tertiary	0.799 (0.033)	***	0.820 (0.041)	***	0.754 (0.055)	***
Area of resid. (ref. North/Centre)						
South	1.038 (0.030)					
Place of birth (ref. Italy)						
Foreign country	1.346 (0.054)	***	1.493 (0.070)	***	1.071 (0.082)	
Education (ref. upper secondary)						
Still studying	0.331 (0.018)	***	0.317 (0.023)	***	0.360 (0.031)	***
Up to lower secondary	1.230 (0.039)	***	1.235 (0.051)	***	1.228 (0.062)	***
Tertiary	1.026 (0.044)		0.967 (0.051)		1.120 (0.087)	
Employment (ref. not employed)						
Employed	0.990 (0.028)		1.020 (0.048)		0.948 (0.033)	*

Source: Author's elaboration on FSS 2016 data

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. Sample sizes: Italy = 9148; Northern/Central Italy = 5582; Southern Italy = 3566

Table 5 Employment status and transition to motherhood over time, only women who have never worked for more than 6 months in the macro-area opposite to that they live in at the time of the interview. Cox models, HRs are reported with standard errors in brackets

	Italy (whole country)		Northern/Central Italy		Southern Italy	
	HR (std. error)		HR (std. error)		HR (std. error)	
Employed (ref. not employed)	0.831 (0.052)	***	0.836 (0.066)	**	0.865 (0.101)	
Calendar time (ref. before 1980)						
1980–1989	0.598 (0.033)	***	0.504 (0.042)	***	0.704 (0.053)	***
1990–1999	0.400 (0.024)	***	0.362 (0.031)	***	0.458 (0.037)	***
2000–2009	0.401 (0.025)	***	0.392 (0.036)	***	0.436 (0.038)	***
2010–2016	0.336 (0.028)	***	0.344 (0.042)	***	0.361 (0.041)	***
Employed * 1980–1989	1.110 (0.090)		1.189 (0.126)		1.174 (0.169)	
Employed * 1990–1999	1.201 (0.099)	**	1.189 (0.127)	*	1.246 (0.190)	
Employed * 2000–2009	1.320 (0.109)	***	1.253 (0.135)	**	1.222 (0.184)	
Employed * 2010–2016	1.526 (0.158)	***	1.372 (0.194)	**	1.502 (0.265)	**

Models control for parents' education, place of birth, respondent's education

Source: Author's elaboration on FSS 2016 data

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. Sample sizes are the same as in Table 4

Table 6 Employment status and transition to motherhood, only native women. Cox models, HRs are reported with standard errors in brackets

	Italy (whole country)		Northern/Central Italy		Southern Italy	
	HR (std. error)		HR (std. error)		HR (std. error)	
Calendar time (ref. before 1980)						
1980–1989	0.581 (0.026)	***	0.498 (0.029)	***	0.697 (0.047)	***
1990–1999	0.391 (0.019)	***	0.345 (0.022)	***	0.450 (0.033)	***
2000–2009	0.415 (0.021)	***	0.398 (0.027)	***	0.420 (0.033)	***
2010–2016	0.380 (0.023)	***	0.363 (0.029)	***	0.401 (0.038)	***
Parental education (ref. primary)						
Lower secondary	0.880 (0.031)	***	0.897 (0.041)	**	0.854 (0.049)	***
Upper secondary/tertiary	0.784 (0.035)	***	0.811 (0.044)	***	0.738 (0.056)	***
Area of resid. (ref. North/Centre)						
South	1.081 (0.033)	*				
Ever migrated (ref. no)						
Yes	0.887 (0.086)		1.047 (0.137)		0.762 (0.107)	*
Education (ref. upper secondary)						
Still studying	0.315 (0.019)	***	0.308 (0.025)	***	0.338 (0.030)	***
Up to lower secondary	1.243 (0.042)	***	1.264 (0.056)	***	1.226 (0.066)	***
Tertiary	1.009 (0.045)		0.942 (0.053)		1.132 (0.088)	*
Employment (ref. not employed)						
Employed	1.020 (0.032)		1.042 (0.043)		0.988 (0.033)	

Source: Author's elaboration on FSS 2016 data

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. Sample sizes: Italy = 8214; Northern/Central Italy = 4861; Southern Italy = 3353

Table 7 Employment status and transition to motherhood over time, only native women. Cox models, HRs are reported with standard errors in brackets

	Italy (whole country)		Northern/Central Italy		Southern Italy	
	HR (std. error)		HR (std. error)		HR (std. error)	
Employed (ref. not employed)	0.805 (0.052)	***	0.790 (0.066)	***	0.811 (0.096)	*
Calendar time (ref. before 1980)						
1980–1989	0.558 (0.033)	***	0.447 (0.041)	***	0.669 (0.051)	***
1990–1999	0.347 (0.022)	***	0.284 (0.028)	***	0.420 (0.036)	***
2000–2009	0.332 (0.023)	***	0.279 (0.031)	***	0.402 (0.036)	***
2010–2016	0.276 (0.025)	***	0.233 (0.036)	***	0.337 (0.040)	***
Employed * 1980–1989	1.111 (0.094)		1.213 (0.137)	*	1.187 (0.261)	
Employed * 1990–1999	1.305 (0.113)	***	1.378 (0.161)	***	1.309 (0.202)	*
Employed * 2000–2009	1.536 (0.135)	***	1.682 (0.208)	***	1.224 (0.187)	
Employed * 2010–2016	1.771 (0.198)	***	1.880 (0.320)	***	1.609 (0.285)	***

Models control for parents' education, having ever migrated, respondent's education

Source: Author's elaboration on FSS 2016 data

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. Sample sizes are the same as in Table 6

Table 8 Employment status and transition to motherhood with control for time-varying union status. Cox models, HRs are reported with standard errors in brackets

	Italy (whole country)		Northern/Central Italy		Southern Italy	
	HR (std. error)		HR (std. error)		HR (std. error)	
Calendar time (ref. before 1980)						
1980–1989	0.645 (0.027)	***	0.582 (0.032)	***	0.726 (0.048)	***
1990–1999	0.561 (0.025)	***	0.501 (0.029)	***	0.636 (0.045)	***
2000–2009	0.588 (0.028)	***	0.540 (0.033)	***	0.608 (0.047)	***
2010–2016	0.591 (0.034)	***	0.538 (0.039)	***	0.617 (0.057)	***
Parental education (ref. primary)						
Lower secondary	0.838 (0.028)	***	0.856 (0.037)	***	0.847 (0.046)	***
Upper secondary/tertiary	0.767 (0.031)	***	0.794 (0.040)	***	0.782 (0.056)	***
Area of resid. (ref. North/Centre)						
South	1.029 (0.031)					
Place of birth (ref. Italy)						
Foreign country	1.087 (0.043)	**	1.300 (0.061)	***	0.827 (0.064)	**
Ever migrated (ref. no)						
Yes	0.955 (0.079)		1.124 (0.139)		0.679 (0.096)	**
Education (ref. upper secondary)						
Still studying	0.440 (0.024)	***	0.426 (0.031)	***	0.476 (0.041)	***
Up to lower secondary	0.994 (0.032)		1.020 (0.042)		0.883 (0.046)	**
Tertiary	1.098 (0.047)	**	1.056 (0.055)		1.084 (0.082)	*
Union status (ref. not in union)						
In union	13.894 (0.475)	***	10.800 (0.472)	***	21.075 (1.151)	***
Employment (ref. not employed)						
Employed	0.889 (0.028)	**	0.998 (0.047)		0.968 (0.046)	

Source: Author's elaboration on FSS 2016 data

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$. Sample sizes: Italy = 9229; Northern/Central Italy = 5606; Southern Italy = 3623

Table 9 Employment status and transition to motherhood over time with control for time-varying union status. Cox models, HRs are reported with standard errors in brackets

	Italy (whole country)		Northern/Central Italy		Southern Italy	
	HR (std. error)		HR (std. error)		HR (std. error)	
Employed (ref. not employed)	0.980 (0.061)		1.001 (0.079)		0.998 (0.116)	
Calendar time (ref. before 1980)						
1980–1989	0.665 (0.037)	***	0.605 (0.050)	***	0.713 (0.054)	***
1990–1999	0.600 (0.035)	***	0.570 (0.049)	***	0.634 (0.052)	***
2000–2009	0.666 (0.042)	***	0.636 (0.058)	***	0.734 (0.066)	***
2010–2016	0.584 (0.048)	***	0.581 (0.071)	***	0.651 (0.075)	***
Employed * 1980–1989	0.972 (0.079)		0.994 (0.105)		1.101 (0.165)	
Employed * 1990–1999	1.001 (0.082)		1.091 (0.102)		1.074 (0.161)	
Employed * 2000–2009	1.089 (0.083)	*	1.141 (0.112)	*	0.790 (0.116)	
Employed * 2010–2016	1.310 (0.135)	***	1.230 (0.174)	**	1.158 (0.204)	

Models control for parents' education, place of birth, ever migrated, respondent's education, union status

Source: Author's elaboration on FSS 2016 data

*$p<0.10$; ** $p<0.05$; ***$p<0.01$. Sample sizes are the same as in Table 8

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Authors' contributions
The author reads and approved the final manuscript.

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Availability of data and materials
The data that support the findings of this study are available from the Italian National Institute of Statistics (ISTAT). Restrictions apply to the availability of these data, which were used under license for this study. Data are available at: https://www.istat.it/it/dati-analisi-e-prodotti/microdati with the permission of ISTAT.

Declarations

Competing interests
The author declares no competing interests.

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