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Career break around childbirth:

the role of individual preferences and social norms

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Abstract

The prolonged career break around childbirth is one of the reasons behind large motherhood penalties in terms of pay and employment opportunities. We aim to understand what is driving the duration of career break in Italy, where it often remains longer than the five-month obligatory maternity leave. The theoretical model proposed describes trade-offs about career, fertility and time devoted to children, allowing for heterogeneity in women's education and preferences for parenting versus career. This preference is an individual characteristic which can be influenced by social norms and gender stereotypes. By relying on PLUS 2014 and 2021 surveys, we test model predictions and reveal an interesting shift: while a decade ago women characterised by higher parenting priority seemed to be more exposed to the risk of dropping out from the labour market, nowadays the desire to have kids appears to go side by side with the desire to maintain paid employment. We interpret this as a course for economic independence on the side of Italian women, especially the more educated, probably related to a shift in their priorities from parenting towards work and career. Further analysis is proposed to understand how the prevailing social norms and local characteristics could impact on career break and labour market participation.

Keywords Career break, Female labour force participation, Italy.

JEL Classification D10, J13, J22.

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1. Introduction

Despite a positive relationship between female participation to the labour market and fertility has emerged in developed countries since the '80s (Bettio and Villa 1998), combining motherhood with professional career remains a difficult task, especially for women occupying high professional niches, due to career breaks associated with childbirth.

In this paper, we study the decisions of Italian women about the duration of career break after childbirth emphasising the role of individual preferences, the institutional context, social norms, and gender stereotypes. Italy is an interesting case study characterised by low female labour force participation and fertility rates.[1] Moreover, despite the quite generous maternity leave legislation (Addabbo et al. 2021), a large majority of mothers stay at home longer than the five-month obligatory paid maternity leave, or permanently drop out from the labour market at some point after childbirth (Minello and Cannito 2023).

Alongside to features widely discussed in the literature (such as childcare costs, mobility etc.), the main factors influencing the duration of career break after childbirth that we emphasise are individual preferences and believes, as well as the family and social context. A mother might choose a longer career break because she enjoys the process of raising kids, comparatively more than working, and because of the belief that it is 'good for the child' (an idea which can be induced by existing social norms).

A simple model is presented to describe the main features affecting a woman's choice of job type, fertility, and career break after childbirth. The model highlights the role of two sources of heterogeneity among women: education and priority given to parenting as opposed to paid work. Education affects the job type and the wage earned, whereas priority is defined as a preference parameter measuring the trade-off between parenting time and consumption in the woman's utility function. This parameter is an individual characteristic of the woman but can be influenced by social norms and gender stereotypes. The model also accounts for differences in households' size and related economies of scale in consumption. Differently from Barigozzi et al. (2018), in which the prospect of a higher wage (future job opportunities) determines child-care and career decisions, in our model the monetary gain from choosing a high career is given and women's decisions depend on personal characteristics, namely education and priority given to parenting. In addition,

[1]In 2021, the total fertility rate in Italy was 1.25, the third lowest in the EU27 after Malta (1.13) and Spain (1.19), whereas female employment rate in Italy (55%) was the lowest (age group 20-64), followed by Greece (55.9%) (Eurostat).

social norms enter the scene, as they might contribute to shifting the priorities. The results suggest that the duration of career break is a decreasing function of the woman's wage, whereas it increases with the priority given to children, the price of formal childcare, and the partner's income.

The model predictions are tested empirically using data from the Plus 2014 and 2021 surveys for Italy providing information on the actual time away from the job after childbirth, which varies quite a lot among Italian women. This dataset is complemented with a series of indicators at regional or province level, which aim to capture existing social norms and gender stereotypes. We also control for variables traditionally highlighted in the literature, such as childcare coverage and female inactivity rate.

Put together, the results of our theoretical and empirical analyses suggest that women in high-career jobs tend to stay less out of the labour market following childbirth. Preferences for parenting time, instead, were associated to longer duration of career break in earlier years. More recently a divide has been revealed between low and highly educated women: while for the former the preferences for parenting time are no longer an obstacle for paid employment, for the latter it even became a push factor to work more. This can be partly explained by the diffusion of one-child-family model, as well as the change in parenting style. Social norms and gender stereotypes appear to significantly affect women's decision on the time spent in childcare. Other factors that motivate a woman's choice are job security, the availability of childcare facilities, and the presence of a collaborative partner.

This paper contributes to the literature in several ways. First, it presents a theoretical model to highlight the trade-offs faced by women, regarding the job type, whether to have kids and then how much time to devote to childrearing. Second, on the empirical side, we use a dataset that contains information on the actual career break after childbirth, which varies a lot in Italy despite the legal framework is the same for all women. Third, we consider the effects of the local context, social norms, and family arrangements on women's decisions. Finally, we highlight an important shift in how individual preferences manifest with respect to choices regarding the career break and dropout. This opens space for policy interventions aimed at increasing both fertility and female labour force participation, two issues which remain problematic in Italy.

The rest of the paper is organised as follows. Section two discusses the related literature. Section three introduces a theoretical model. Section four describes the data and modelling strategy used in the empirical part. Section five presents the findings. Some concluding remarks and policy implications follow in section six.

2. Related literature

Maternity leave policies provide women the right to a period of job-protected leave around childbirth and are a way to reduce the 'cost of motherhood', acting on both employment and fertility (Lalive and Zweimuller 2009)**.** Nevertheless, similar duration of mandatory maternity leave throughout Europe (EPRS 2019) is coupled with very different outcomes in terms of actual length of career break and female labour force participation (EPRS 2020). This is partially explained by the fact that, in some countries (like Italy), women often tend to stay out of the labour market longer than the obligatory paid maternity leave, or even drop out altogether following childbirth. Therefore, the duration of mandatory maternity leave is not a good indicator of the *actual absence of women from work.*

The relevant economic literature is mostly empirical, and it has identified several reasons behind the duration of career break after childbirth, among them: individual characteristics (e.g. woman's educational attainment, beliefs about the child well-being), family and social characteristics (e.g. labour market institutions, social norms). Individual preferences regarding the time spent with children have been so far neglected by the literature on career break. We aim at filling this gap by considering a woman's "preferences for parenting", to be interpreted as a preference parameter measuring the trade-off between parenting time and consumption in the woman's utility function.[2] Differently from previous literature, we hypothesise that a woman's priority between parenting and paid work influences fertility decisions and her willingness to spend time out of work caring for children.

When choosing the length of career breaks pros and cons should be carefully balanced, also considering possible effects on cognitive and non-cognitive abilities of children (see e.g. Del Bono et al. 2016). As pointed out by Del Boca et al. (2014), both parents' time inputs are important for children cognitive development, particularly when the child is young (see also Di Gioacchino 2012). Nevertheless, Dustmann and Schönberg (2012) find little support for the hypothesis that an expansion in the period of mandatory maternity leave improves children's outcomes, both in terms of future wages and attendance at high track schools. In line with that, Bernal and Keane (2011) find that formal external care (as opposed to informal care) has no adverse effect on cognitive achievement test scores.

On the labour market side, a longer career break reduces the mother's probability to come back to work, increasing the risk of falling into poverty, leads to heavy penalties on female wages

[2] It has already been used in the literature on fertility (see e.g. Easterlin et al. 1980; De Bruijn 2006).

(Lindley 2016) and lowers the chances of career progression (Adda et al. 2017, Olivetti and Petrongolo 2017). In addition, a recent study, based on a large-scale field experiment, has shown that childless married women (at high risk of becoming pregnant) are at a disadvantage compared to single ones when applying for a part-time job. Such effect disappears for full-time job applicants, because in this case women would signal that they are in a position, if need be, to arrange for external childcare instead of a long career break (Becker et al. 2019). In any case, it has been shown that the provision of paid leave to mothers widens the gender earnings gap among full-time employees (Thevenon and Solaz 2014).

Social and cultural norms have also been shown to play a role, and they vary slowly over time. Specific long-term effects on labour market participation of married women with young children have been attributed to social transformations (Boeri et al. 2005), to religion (Pastore and Tenaglia 2013) and to the nature of family ties (Alesina and Giuliano, 2010). More recently, Welteke and Wrohlich (2019) demonstrate that coworkers' choices have a significant impact on maternal decisions regarding parental leave after childbirth. In addition, parents transmit their values and preferences to the offspring, thus influencing attitudes regarding women's role (see e.g. Farré and Vella 2013). The increasing presence of men brought up in families in which the mother worked seems to have been a significant factor pushing up female labour force participation (Fernández et al. 2004). Furthermore, certain policy programs (as fathers' quota in parental leave schemes) can have indirect effects through social interactions and contribute to changing attitudes towards gender roles in society as a whole (Unterhofer and Wrohlich 2017).

The increase in women's formal level of education has been analysed as a driving force behind higher labour market attachment of women (see, among others, Bratti 2003). Accordingly, it is reasonable to expect that more educated women opt for shorter periods of absence from work after childbirth. On this point, Kuhlenkasper and Kauermann (2010) show that personal income and educational attainment influence the decision as to when to return to work after the first childbirth. Macran et al. (1996) have pointed to a kind of polarisation of British mothers according to social groups, in terms of the ability to enter and to stay in paid employment after childbirth. Being in higher status occupation and earning an adequate income allows families to effectively externalise care. Finally, new mothers with an occupational status at least as high as that of male partner have been proven to be less likely to reduce their labour supply in the period around their first childbirth (Begall and Grunow 2015).

In this paper, we focus on Italy, which is an interesting case, as it is characterised by long career breaks, often resulting in non-participation of women to the labour market after the first

childbirth, coupled with a penalty on female wages (Picchio et al. 2021) and career progressions (Pacelli et al. 2013**)**.

A chronic undersize of public childcare services has long been identified as one of the most important factors responsible for the low labour force participation of Italian women, and it can be suspected of lengthening the duration of careers breaks. In Italy, only around 13% of the demand for public childcare coverage is met, the most critical being the lack of places in early childcare (ISTAT 2019). Recent policy actions aimed at increasing the coverage rates for kids aged 0-2 are producing heterogeneous effects among Italian regions. While some increase in childcare coverage rates has been observed in the Central and Northern parts of the country, the effect has been practically nil in the South, except for provincial capitals (Giorgetti and Picchio 2021).[3] In addition to lack of places, public structures offer an insufficient number of hours per day, and private childcare is expensive. As a result, the main safety net for Italian mothers remains the family, namely grandparents. The presence of an elderly member cohabiting with the family increases the chances for women to (re)enter the labour market (Ghignoni and Verashchagina 2016, Minello e Cannito 2023).

As documented by ISTAT (2015), in Italy the stereotypes on gender roles are still strong. The image of the male breadwinner persists: one in two interviewees agrees with the statement "it is especially the man who has to provide for the economic needs of the family". The division of housework within the family is strongly asymmetric with around 75% of the workload falling on women. Even in childcare, which is the activity more equally distributed within couples, mothers continue to be the main providers, with 2/3 of childcare time falling on mothers.

As to the role of labour market institutions, despite the increased availability of part-time jobs in Italy, returning to a full-time job after a period spent in part-time is difficult.[4] Some authors have pointed out that, thanks to the high protection accorded to part-time jobs in Italy, a significant motherhood wage penalty seems to emerge only among women working full-time before and after childbirth (Pacelli et al. 2013). On the other hand, the widespread fixed-term contracts among young people increase female segregation in precarious jobs. In that case, women risk undergoing long spells of non–employment or under–employment after childbirth, which are likely to bring strong losses in mothers' human capital and future wages.

[3] Note that, as of March 2022, Southern municipalities in Italy have requested only half of the PNRR funds available to them and intended for early child-care facilities (Sloop 2022).

[4] This is quite different from the model adopted by some countries, e.g. the Netherlands, where leaving employment after the first child birth is very uncommon. Despite part-time may represent a pitfall for vulnerable people involved in precarious jobs, the likelihood for a reduction in working hours to be associated with occupational downgrading is low (Begall and Grunow 2015).

Finally, recent studies (Lauber and Storck 2019) have put in evidence the importance of creating family friendly workplaces (such as in-house kindergarten, crèche, and day nursery) to help parents reconcile work and family life. Nevertheless, these types of policies are still pioneering in Italy.

3. The theoretical model

We consider a simple two-period model that describes what we believe to be the main features affecting a woman's choice of career, fertility, and parenting time.[5] In our model, women differ in education level (High or Low) and priorities (Work *versus* Parenting). In the first period, they choose whether to have a child and the type of job. Low educated women can only choose a low career job and their salary is w_L. Highly educated women can choose a low career job and earn a salary $w_H (> w_L)$, or a high career job, and earn a salary πw_H $(\pi > 1)$. In the second period, mothers choose the duration of career break after childbirth; women without children work full-time in the job they have chosen in the first period and consume all their income.[6] To model career break decisions, we divide the second period in two sub-periods. The first of length $x \in [0, 1]$ represents the length of career break after childbirth; in the second sub-period of length $(1 - x)$ the mother works.

We assume that a woman derives utility from consumption (c) and, if mother, from spending time with the child:[7]

$$U_\beta(c, x) = u(c) + \beta v(x) \qquad \textbf{(1)}$$

$u(c)$ is increasing and quasi-concave, $v(x)$ is increasing and concave.

The parameter $\beta \geq 0$ differs across women and measures the woman's trade-off between consumption and time spent with the child. Parenting time may be a desirable activity because of time complementarities: non-working time is valuable because the mother enjoys being with the child.[8] It is also valuable if (she believes that) time spent with the mother has a positive effect on the child's cognitive and non-cognitive abilities. A low value of the parameter β indicates that her career, and the associated increase in the household consumption possibilities, is higher than child-

[5] We use the term parenting time to describe the time spent by the mother caring for the child. We do not consider separately activities that are more rewarding for the mother and/or more valuable for the child's development, such as playing and reading, from routine activities, such as accompanying children or organising their activities.

[6] We exclude the possibility for a woman to change the type of job in the second period.

[7] Without loss of generality, here we focus on second period utility.

[8] Based on a sample of Danish parents, Bonke and Esping-Andersen (2011) emphasise the importance of parental preferences, rather than parental market income, in child-care decisions.

rearing in the woman's priority scale.[9] In what follows, we refer to β as a measure of the woman's *preference for parenting time* (PPT). Together with characteristics of the mother, other factors affecting this parameter are social norms and gender stereotypes.

To find a woman's optimal allocation of time between paid work and parenting time, we proceed backward. In the second period, given the woman's job type, decisions on consumption and career break are taken to maximise the utility function subject to the budget constraint.

Consider a household with *s* children. The household total income, *y*, is the sum of the woman's (w) and her partner's wage ($\overline{w}$), if any:

$$y = \begin{cases} w + I\overline{w} & if\ \mathrm{s} = 0 \\ w(1-x) + I\overline{w} & \text{if s} > 0 \end{cases}$$

where I is a dummy taking value 1 if there is a partner and 0 otherwise.

We assume that household's income is entirely absorbed by consumption and childcare expenditure. Let *k* be the time a child spends in formal childcare at the market price p. Assuming only one of the children is in child-care age, child-care expenditure is equal to kp. If the child must be taken care of for the whole period, either at home or outside, then formal childcare time is the same as the mother's working time $k = 1 - x$. [10]

To account for differences in households' size and related economies of scale, individual (equivalised) consumption is computed by dividing household consumption expenditure by its equivalent size. The equivalent size of a household with *n* members is taken to be $\sqrt{n}$ (OECD 2011).[11] Summing up, and letting the household numerosity be $n = s + 1 + I$, the household budget constraint is

$$c = \frac{(w - \mathrm{p})(1-x) + I\overline{w}}{\sqrt{n}} \qquad \textbf{(2)}$$

For a woman without children the choice of working time and consumption is straightforward: she works full-time, and consumption completely absorbs household income $\left(x^* = 0\ and\ c^* = \frac{w+I\overline{w}}{\sqrt{1+I}}\right)$. Her (indirect) utility is:

$$U_0^*\left(\frac{w + I\overline{w}}{\sqrt{1+I}}\right) = u\left(\frac{w + I\overline{w}}{\sqrt{1+I}}\right) \qquad \textbf{(3)}$$

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[9] Focusing on the trade-off consumption *vs* parenting time, we are not considering the (dis)utility associated with work, implicitly assuming this is (partly) captured by the level of educational attainment: highly educated women get access to more rewarding and interesting jobs.

[10] This is a simplification, which does not allow to consider the time a child spends with the father or other family members. If the partner spent a time z in childcare, then the time devoted to childcare by the mother might decrease, and the time spent in formal childcare by the kid would be $k = 1 - z - x$. So, our definition of the chosen career break can be read as an upper bound.

[11] Given income y, the equivalised income is equal to $\sqrt{n}y$. Assuming an equal consumption share among the n members of a household, the budget constraint is $nc = \sqrt{n}y$, which implies $c = \frac{y}{\sqrt{n}}$.

Next, consider a mother. She maximises the Lagrangian:

$$L = u(c) + \beta v(x) - \lambda\left[\frac{(w-p)(1-x) + I\bar{w}}{\sqrt{n}} - c\right] \quad \textbf{(4)}$$

The first order conditions require:

$$c^* = \frac{(w-p)(1-x^*) + I\bar{w}}{\sqrt{n}} \quad \textbf{(5)}$$

and

$$v_x(x^*) = \frac{w-p}{\beta\sqrt{n}} u_c\big(c^*(x^*)\big) \quad \textbf{(6)}$$

Thus, career break depends on the woman's salary, her preference for parenting time, whether she has a partner, the number of children and the price of formal childcare.[12] Here we focus on the woman's wage and her PPT and write $x^*(w, \beta)$.[13]

In what follows, we are going to derive a series of results relating a woman's choice of fertility and career break to her education and preferences for parenting time. All proofs are in Appendix A.

First consider the second period choice of career break. We can prove the following:

Result 1: *Career break increases with preferences for parenting time.*

Intuitively, if the mother believes that parenting time is important for the child's development and/or if she enjoys being with the child, then she will forgo market income to stay with the child.[14]

Result 2: For a single mother, *if* $-\frac{c^* u_{cc}(c^*)}{u_c(c^*)} < \frac{1}{\sqrt{n}}$ *then career break is a decreasing function of her salary.*[15]

The condition in result 2 requires that, accounting for economies of scale in consumption, the substitution effect of a salary increase is higher than the income effect. It puts a bound on the

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[12] Note that $\frac{w-p}{\sqrt{n}}$ is the income effect of an increase in career break on consumption. Recall that we have assumed that only the mother devotes time to childcare (see footnote 10). Therefore, the presence of a partner affects the duration of career break only (indirectly) through household income and economies of scale in consumption.

[13] Note that if $v_x(x) > \frac{w-p}{\beta\sqrt{n}} u_c(\mathrm{c})$ then the woman drops out of the labour market ($x^*(w, \beta) = 1$) and household consumption is equal to the equivalized partner income $\left(c^* = \frac{I\bar{w}}{\sqrt{n}}\right)$. This suggests that only mothers with a partner have the option to drop out. This is more likely, the higher is β and the lower is the mother's wage.

[14] This result depends on having assumed that $v(x)$ is concave. If this were not the case, then higher β would induce the mother to spend less time with the child. Concavity or convexity of $v(x)$ reflects effectiveness of parenting time. If we interpret $v(\cdot)$ as the child's human capital production function, then increasing return to scale to parenting time could be related to the mother's education level as in Becker et al. (2019).

[15] If $-\frac{c^* u_{cc}(c^*)}{u_c(c^*)} < \frac{1}{\sqrt{n}}$ then career break is not affected by the mother's salary: income and substitution effect cancel out.

coefficient of relative risk aversion, and it is obviously satisfied by a linear utility function and by a CRRA utility function with degree of relative risk aversion smaller than one.

In what follows, we take:

$$u(c_t) = c_t \tag{7}$$

In this case, result 2 holds also for mothers with a partner.[16]

With constant marginal utility of consumption, the explicit solution for the optimal career break is $x^* = v_x^{-1}\left(\frac{w-p}{\beta\sqrt{n}}\right)$: career break increases with β and decreases with w. Thus, *ceteris paribus*, a highly educated woman in a low career job will choose a longer absence from work than a woman in a high career job. Note that, with a utility function linear in consumption, the partner's salary does not affect the choice of career break, but only the level of consumption. This is obvious because we have assumed that only the mother devotes time to childcare.

Next, consider a woman's fertility and career decisions, taken in period one. To this purpose, we compute and compare the (indirect) utility of highly and low educated women, as a function of their fertility and career decisions. Write the (indirect) utility for a mother with preferences for parenting time equal to β and earning a salary *w* as

$$U_\beta^*(w) = \frac{(w-p)\big(1-x^*(w,\beta)\big) + I\overline{w}}{\sqrt{n}} + \beta v\big(x^*(w,\beta)\big) \tag{8}$$

Regarding fertility decision, we have the following:

Result 3: *A woman will choose to have a child if* $\beta > \tilde{\beta}$

Intuitively, the higher a woman's preference for parenting time, the more likely she will become a mother. In Appendix A, we show that $\tilde{\beta}$ increases with *w*, so a low educated woman will be more likely to have a child than a highly educated woman with the same preferences for parenting time. The reason is that, anticipating her choice of a short career break in the second period, a highly educated woman will become a mother only if her preferences for parenting time are high enough and higher than if she had been low educated.

Next, compare the utility for a highly educated woman in a low and a high career job, in case of no child.

Result 4: *A highly educated women not willing to be a mother (*$\beta = 0$*) will always choose a high career job* $(q = \pi)$.

[16] For mothers with a partner and a sufficiently concave utility function, it might be that the optimal career break increases with the mother's salary (see Appendix A).

This is obvious. In fact, for a childless woman there is no trade-off and no reason to give up a high salary. Differently, the career's choice of a highly educated woman opting to become a mother depends on her preferences for parenting time.

Result 5: *A highly educated (potential) mother will choose a low career job and 'long' career break if* $\beta > \bar{\beta}$.

The reason is that a woman who prioritise child-rearing, in anticipation of her choice of a long career break in the second period, will choose a low career job because this entails giving up a lower salary.

Summing up, our results suggest that education, market income, and preferences for parenting time affect women's choice of fertility and career break after childbirth. Preferences for parenting time are in part exogenous and in part influenced by social norms and gender stereotypes. Career break also depends on the cost and availability of formal childcare and on the presence of a partner. In the next section, we test the results of our model on Italian data.

4. Data and methodology

The main data for our analysis are drawn from the Plus survey, 2014 and 2021 waves.[17] We consider women aged 22-50, who are expected to have finished their studies and include only women who are or might become mothers.

This reduces the sample from the total of 25,999 (24,647 in 2021) to 19,405 (16,902 in 2021) women. Out of them, 6,912 (5,559 in 2021) had at least one child below the age of 14 at the time of the interview. During the last maternity experience,[18] 43% (36% in 2021) were working before the birth of the (last) child and got back to work afterwards. Few of them did not have a formal contract, thus could not make use of maternity leave, or voluntarily refused to make use of maternity leave. As a result, the duration of maternity leave can only be observed for about 35% (25% in 2021) of mothers.

Our focus is on the time mothers devote to looking after young children with a view to analyse decisions regarding not only the *maternity leave* (our first dependent variable) measured in month, but also the prolonged absence from work beyond that. Accordingly, our second dependent variable, *career break*, has been defined. It takes value 0 for women who did not stop

[17] https://old.inapp.org/it/dati/plus The PLUS (Participation, Labour, Unemployment, Survey), previously implemented by ISFOL and more recently by INAPP, has been specifically designed to collect data on vulnerable groups (women, young people and the over 50). It thus offers a range of information which is not otherwise available in more traditional surveys.

[18] The information on employment history around childbirth that we use refers to the last-born child.

working after childbirth, either because they were working without a regular contract, or because they voluntarily choose not to use maternity leave[19] (around 8.5% of them in both years). Values 1 to 3 stand, respectively, for those who stayed out of the labour market for: 1) 1-5 months; 2) 6-11 months; 3) 12-36 months.[20] Women who dropped out from work after childbirth are categorised as number 4. Finally, mothers who worked neither before nor right after childbirth are treated as those who tend to devote most time to motherhood and are identified with the highest value (5) of our proxy.[21] A third dependent variable has been considered, *dropout*, which includes the categories 4 and 5 of the variable career break.

Figure 1 shows the distribution of maternity leave measured in months for mothers on a regular contract before the childbirth (panel A), and our proxy of career break for mothers (panel B) in the two different surveys. The Figure shows that the duration of maternity leave for mothers on a regular contract tends to reduce in the 2021 survey, concentrating around the 5-month obligatory period, while the share of women who drop out after childbirth has dramatically increased over time.

[Figure 1 about here]

Panel A in Figure 2 shows the distribution of maternity leave, measured in months, in Italian regions, highlighting that its duration is the longest in the North. Panel B in Figure 2, in turn, shows the distribution by Italian regions of our proxy variable. The use of the proxy highlights that in Southern regions women tend to be out of work for longer periods, which is coherent with the pattern of female employment traditionally lower in the South.

[Figure 2 about here]

The empirical model consists of a system of two equations, respectively for: 1) being a *mother* of at least one child[22]; and 2) being out of work and for how long, *absence from work*:[23]

[19] This could be the case of self-employed women.

[20] The duration of absence from work corresponds to the answers to the following question: "How many months have you been continuously absent from the place of work following childbirth (including obligatory maternity leave, vacations, illnesses, parental leaves etc.)?" Given a certain degree of imprecision in indicating the number of months spent taking care of the kids, we opt to group those values in broader categories: obligatory leave, obligatory plus paid parental leave, and up to 3 years of age, when the majority of kids in Italy enter the kindergarten (*it. scuola d'infanzia*).

[21] After excluding from this last category women who at the moment of interview declare to be prevalently inactive, we end up with 19% (16% in 2021) of women with the longest absence from work. We assume, for them career break started before the child was born, as if a woman anticipated she would anyway stop working after childbirth. Note that the incidence of category 5 varies a lot among Italian regions.

[22] Although our focus is on decisions about career break around childbirth, the theoretical and the econometric models also consider fertility choices. This allows to address the potential selection bias.

[23] Three dependent variables are used interchangeably to estimate equation 10: maternity leave, career break and dropout, see Table B.1 for details.

$$Mother_i = \alpha_1 X_i + \alpha_2 K_j + u_i \quad \textbf{(9)}$$

$$Absence\ from\ work_i = \beta_1 X_i + \beta_2 H_j + v_i \quad \textbf{(10)}$$

Vector *Xi* contains our main (individual) variables of interest plus a series of individual/work related/household characteristics, including education, preference for parenting time, age, occupational position (high/medium as opposed to low) and equivalised family income. We admit that preference for parenting time may vary over time and thus think of it as build of two parts: 1) innate (exogenous) and 2) acquired (subject to social context). What we aim to grasp with our key explanatory variable, *PPT*, is the innate part. As a proxy for PPT, we take the *desired number of children* which is equal to the actual number if a woman declares not to be willing to have other kids in the next three years, and to the actual number plus one if she plans to have another kid soon (see Table B.1 in Appendix B). The variable's mean is 1,11 in 2014, dropping to 0.86 in 2021 (Table B.2). Figure 3 below shows how it varies by level of education, employment status, family income and occupation. The desired number of children is higher for women with lower level of education and employed in low-level occupations. Albeit some leveraging has been observed at a cost of reducing the desired number of children over the period considered, especially for women at low levels of education.

[Figure 3 about here]

Table 1 highlights the differences between the desired and the actual number of children. Note that within the most numerous group of women without children (9,962 in 2014 and 11,375 in 2021), about one third (3.462 women in 2014 and 4,049 in 2021) express their willingness to become a mother soon, whereas within the group of mothers with one child (3.147 in 2014 and 2,517 in 2021) only about one fourth are thinking along these lines in 2014 (one third in 2021). The willingness to have 'other children' could be affected by the ideal number of children they have in mind, or by how they lived through their previous maternity.[24]

The dataset at hand does not allow to reveal the *ultimate* desired number of children, which could be higher than our measure of desired number of children.[25] By referring to the number of children women desire in the next few years, we should be able to, at least partly, capture the effect of external factors out of their control (on top of their willingness to voluntarily postpone motherhood).

[24] It might have been complicated by economic constraints (loss of job or difficulties to reconciliate paid work and motherhood), health related problems (on mother's or children's side), difficulties in sharing the care burden (lack of support from partner), etc.

[25] The data from FSS (Famiglie e Soggetti Sociali, ISTAT) 2016 survey suggests that the mean *ideal* number of children in Italy was at 2.40, being moreover higher for older generations as compared to young woman.

[Table 1 about here]

Other individual-level variables considered include age, marital status, an indicator of how collaborative the partner is, commuting time to work,[26] being employed in the public sector (see Table B.2 for descriptive statistics). Apart from the reduction in the desired number of children over time, Table B.2 shows a reduction in the average duration of maternity leave for women with regular jobs (from 6.3 months to 5), along with a slight increase in career breaks and dropouts from the labour market after childbirth. Despite an increase in women's (average) years of education, the percentage of them employed in medium-high occupations does not increase over time. At the same time, the percentage of married women dropped from 52% in 2014 to 37% in 2021, while the score assigned to 'collaborative partner' more than doubled during our reference period.

We also consider a range of region or province characteristics (vectors *Kj* and *Hj* in equations (9) and (10)), aiming to capture peer effects, social norms, and stereotypes on gender role. These include the average number of children per woman and the use of breastfeeding, the percentage of those who think that a kid suffers if the mother works, and the percentage of women elected in the administrative elections. We also include the mean age of women at birth, alternated with the ratio of miscarriages to live births (both treated as proxies for women's reproductive health) and control for childcare coverage rates and female inactivity rates.

Table B.2 shows a reduction in the average number of children per woman at the local level and an increase in the average age of women at birth. The average rate of childcare coverage rises slightly over time, but not in every region (the notable exceptions are Calabria and Sicilia, as in panel C, Figure B.1). At the same time, the rate of female inactivity at the provincial level declines from 49% to 45%, while the share of women in provincial administrations increases from 10% to 16%. The regional variable that saw the most dramatic change over time is the percentage of people who think that children suffer if the mother works: in a matter of a decade, it drops from 75% to slightly more than 51% (see Table B.2 and Figure B.1). As to province characteristics, there is a lot of variability with some regularities though. The average number of children per women is higher in the Northern parts of Italy. As for the female share in local administration, it is higher in Center-North, but also in Sardegna (see Figure B.2).

Finally, the error terms, u_i and v_i, capture the effect of unobserved characteristics. By estimating the system of equations, we account for the possibility that the two are correlated to

[26] This information is not available in the 2021 questionnaire. In this case, we measure the willingness to move for working purposes by exploiting the information about being/not being willing to give up part of the wage to get the chance of working from home.

each other. The output tables will provide some insights on the intrinsic relation between the two decisions: whether to become a mother, and how much time spend caring for kids. For more details on variables' definition see Table B.1 in Appendix B. Summary statistics are provided in Table B.2. Local variables distribution by regions/provinces are reported, respectively, in Figure B.1/B.2.

5. Empirical findings

Our analysis proceeds by first considering the sample of women who were employed before and after the childbirth and can thus report the maternity leave in months (Model I). Next, we consider as dependent variables career break (Model II) and dropout decisions (Model III).

The main focus is on the absence from work, but we also account for selection into motherhood. The model is thus represented by a recursive system of equations, the first one (Mother) estimated by Probit and the second one in turn by OLS (Maternity leave) / Ordered probit (Career break) / Probit (Dropout decision). Since the estimates of the first stage equation (Mother) practically do not change from one model to the other, we report them only once.

[Table 2 about here]

The estimation results reported in Table 2 suggest that our findings are broadly in line with the theoretical model. PPT appears to be an important predictor of fertility choices but does not seem to influence the duration of Maternity leave, neither in 2014 nor in 2021. Nevertheless, PPT gains significance if we shift attention to *career break* and *dropout*. In 2014, it was associated to a longer career break (Model II), as well as higher dropout probability (Model III). In more recent years (2021), an interesting shift occurs. The results for Model III suggest that higher PPT is associated to lower probability of dropping out, which may seem to be counterintuitive. To gain a better understanding of this finding, and to explore our intuition that an increase in women's education might have played a role in shifting their attitude towards work and family, we introduce an interaction term between PPT and years of education (Panel C in Table 2). In this case, one can observe that the negative association between PPT and dropout remains valid for women with higher levels of education (Model III), who also tend to prolong the maternity leave within reasonable limits (Model I).

We propose several interpretations for these findings. One is that in the wake of the drift to one-child family model there is no need for long parenting: the only kid can be managed without dropping out. Another possibility could be a change in parenting style that has made parents (more) aware of the importance of the quality of parenting time - and not only the quantity of time - for

the children's wellbeing and development. This would require an active engagement of parents in activities with children, rather than spending long hours with the kids while doing housework – cooking, cleaning - and not really doing any activity with them, or otherwise resorting to external childcare facilities. If this awareness is progressively becoming a social norm and/or it is related to the parents' education, we would expect to observe less time spent with children, but a shift towards more effective parenting time, especially among highly educated parents (see footnote 14).

Other than education, individual characteristics which appear to be associated to a shorter career break include having a collaborative partner, being employed in a medium to high occupation, working in the public sector, enjoying higher equivalised family income (in 2014, but not in 2021), and, more recently, being married (see Table 2 and Figures 4, 5, 6 reporting marginal effects).

[Figures 4, 5 and 6 about here]

Overall, a higher level of education is associated to shorter absence from work and lower probability to become a mother. Women in a stable relationship (*married*) were more prone to become mothers and were more at risk to drop out afterwards back in 2014. In 2021 instead, women's expectations appear to have changed: those who are married tend to reduce both the maternity leave and the duration of career break. As the data we use refer to the last-born child, and in the 2021 survey, most of them were born after 2007, the last findings could be a response to the 2008 and the pandemic crises (added worker effect).[27] Notably, having a collaborative partner is associated to higher probability of becoming a mother and lower probability to drop out from work after the birth of a child.

Working in the public sector seems to shelter women from the adverse labour market effects of childbirth: women working in the public sector tend to increase the duration of maternity leave (at least in 2014), and nevertheless the risk of dropping out for them is lower. This could be an indication that job security and lower working time, which are the characteristics of employment in the public sector, help women reconcile work and family life.

In 2014, belonging to an affluent family was associated to a lower duration of career break and risk of dropping out after the childbirth. More recently, the effect of equivalised family income manifests in terms of increased duration of maternity leave, suggesting that working women in better off families can give up (part of) their salary to spend more time with children. Negative

[27] Ghignoni and Verashchagina (2016).

repercussions of family income are nevertheless found on fertility, this last result probably related to the diffusion of dual-earner families.

As for the regional differences, living in Central and Northern regions induces longer maternity leave but lower probability to drop out following childbirth, while supporting higher levels of fertility (with respect to Lazio) (as in Figures 4 and 6).

To better understand what forms the local context, we test the effect of several characteristics defined at the regional/province level, aimed to represent the effects of social norms and gender stereotypes. Specifically, we consider the share of women elected in the administrative elections and the percentage of people who believe that "a pre-school child is likely to suffer if his/her mother works". We also include the mean age of a woman at birth, the average number of children per woman, and the use of breastfeeding. We control for female inactivity rates, the percentage of kids aged 0-3 covered by kindergartens, and the ratio of miscarriages with respect to live birth.

Since some of the local variables are correlated to each other (see Tab. B.3 in the Appendix), we consider one at a time interchangeably. The results, reported in Table 3, suggest that the duration of maternity leave tends to be longer in provinces characterized by higher average number of children per woman back in 2014 and on the opposite tends to reduce in 2021, although the negative effect is more pronounce once we switch to our career break proxy.

[Table 3 about here]

The female-share in local administration, which we interpret as an indication of the degree of gender-equal social context, appears to be associated to higher probability of motherhood and longer maternity leave for women on a regular contract (supporting their right for that); at the same time, it works in the direction of reducing the risk of dropping out from the labour market. We interpret this finding as evidence on the role of gender stereotypes: where gender roles are more traditional, fewer women are elected in local administration, and the chances are higher that, following the role models imposed, women do not go back to work after childbirth.

The belief that it is not good for a kid if the mother works, is another indication of the prevalent social norm and stereotype about women's role. We test the effect of a variable, defined at regional level, which captures the share of population thinking along these lines. Results indicate that this variable is associated to lower duration of maternity leave for women on a regular contract. At the same time, for a broader subsample of women the effect of the variable is positive (Models II and III), albeit loosing significance over time, suggesting that if this belief is widespread women are exposed to a higher risk of dropping out. In addition, the probability of becoming mother tends to be lower in regions where women are expected to stay home after the childbirth, as if women anticipated their future choice over the balance between work and parenting.

In regions with higher female inactivity rates, women shorten their maternity leave: they might feel pressed to come back to work earlier if job opportunities are lacking. Interestingly, non-inclusive local labour markets were associated to a longer career break and a higher probability of dropping out for women in 2014, less so in 2021.

Placing a kid in the kindergarten before the age of 3 may allow to significantly reduce the duration of career break. This nevertheless remains not very common in Italy, mainly due to low availability and affordability of childcare. We could not test for the impact of childcare costs on the duration of maternity leave, instead we have looked at a conventional measure of childcare coverage rates, assuming that higher coverage would be reflected in lower prices for childcare. As expected, higher childcare coverage is associated to shorter career breaks and higher incidence of motherhood, but also longer maternity leave.

Higher age at birth tends to be associated with longer maternity leave and lower probability of dropout. The same holds for the use of breastfeeding, a rather controversial issue.[28] The regional dimension can be fit to grasp the effect of social norm we had in mind, whereas there may be other channels at work. Individual level decision to breastfeed for longer may impact on the duration of career break.

Finally, our last control variable, the number of miscarriages in percentage to live birth, is losing significance over time.[29]

Another interesting finding emerges from Table 2. In 2014, there seemed to be no relationship between the decisions to have children or not, and how much time dedicate to caring for children, despite our modelling strategy assumed there might be unobserved variables influencing both.[30] In 2021 the correlation between the error terms of the two equations became negative and significant. This result suggests there may be unobserved factors that influence both decisions simultaneously in opposite directions, opening space for more effective policy intervention, able to increase both female labour force participation and fertility.

[28] Policies aimed to facilitate this practice for working mothers have been implemented in Italy for quite some time.

[29] The intuition behind was that positive and significant association between this variable and the duration of career break could be an indicator that living in contexts where miscarriages are more frequent induces women to stay longer out of work.

[30] This is verified through the estimated Atanhrho parameter calculated by cmp (Roodman 2009), which stands for the arc-hyperbolic tangents of rho (correlation coefficient between the error terms of the two equations).

6. Concluding remarks and policy implications

We have modelled the choices faced by women regarding childbearing and childrearing, considering their heterogeneous characteristics, including education and preferences for parenting *versus* career. The theoretical model highlights which way the outcomes depend on these characteristics, in particular: the career break following childbirth has been shown to depend negatively on woman's wage, and positively on preferences for parenting.

The empirical part of the paper aimed to identify the key factors that affect the duration of career break after childbirth. Our results suggest that PPT plays an important role, adding to the debate about heterogeneity among women (Hakim 1996 and 2004, Yerkes 2009). In addition, contextual characteristics are important. When mothers are expected to devote more time to childcare or otherwise be judged as 'bad mothers', women generally spend more time in this activity. Policies should thus prioritise challenging existing social norms and stereotypes about gender roles, which requires time and can be a matter of several generations. This strategy touches different areas of intervention, including regulation of advertising/language, and media more broadly, textbooks and other activities at school.

Overall, education is negatively related to the duration of career break for women. Plausible channels for this effect to manifest are better job quality and higher job satisfaction, less fragmented employment trajectories and prospects of career growth, higher self-esteem among women with higher educational attainments. Policies aimed at enhancing educational level and preventing dropouts from upper secondary and tertiary education are thus needed, also to promote gender equal attitudes.

Another factor which appears to be important is the balance of power within couples. The availability of a collaborative partner allows to reduce career breaks, suggesting that promoting equal division of housework and care would improve the chances for women to remain at work after childbirth. The shared responsibility for kids is an issue, which also needs to reach employers, as longer and atypical working hours for men are often an impediment for the equal sharing of duties at home. More balanced parenting time would benefit children, mothers, and fathers. In this respect, longer compulsory paternity leave to favour men's participation in childcare would help reducing the negative effects on women's careers and pay-roll. The (symbolic) ten days under the current Italian legislation are an achievement considering the very slow progress in this direction, but more needs to be done in this respect.

Firms could also have a role in favouring more equal take up between parents of career breaks to care for children and in promoting equal pay and equal career opportunities for men and

women. Policy should help incentivizing firms' 'gender-equal' behaviour and/or requiring transparency about wages, career progression, employment shares and opportunities in the advancement of skills.

On the labour market side, we also highlight the importance of working conditions for mothers. Our estimates show that mothers employed in the public sector, characterised by more secure jobs, spend less time out of work following childbirth. Actions are thus needed to effectively protect (potential) mothers at work, also in the private sector, otherwise the chances are high that many women are expelled from the labour market. Those who remain at work, after the period of maternity leave, should also be encouraged to maintain and develop their skills, not to be pushed towards routine and less creative tasks affecting job satisfaction. In addition, various forms of incentives for mothers to gradually return working, without dropping out, can be proposed. Except for the traditional supply of universal free (high-quality) childcare, we can think of introducing flexible workhours or remote working arrangements, which might help parents reconcile work and family life.

An important feature of the local context, reflecting the perception of women's role in politics and society at large, is female representation in local administration. Out results suggest that promoting gender equality in policy circles is crucial to enhance women's participation in the labour market.

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Appendix A

In this appendix, we prove the results stated in section 3.

Result 1: *Career break increases with preferences for parenting time.*

Proof: This result derives from the concavity of $v(x)$. [31]

Result 2: For a single mother, *if* $-\frac{c^* u_{cc}(c^*)}{u_c(c^*)} < \frac{1}{\sqrt{n}}$ *then career break is a decreasing function of her salary*.

Proof: Consider a salary increase in equation (6). If $-\frac{c^* u_{cc}(c^*)}{u_c(c^*)} < \frac{1}{\sqrt{n}}$ then $\frac{\partial\left[\frac{w-p}{\sqrt{n}} u_c(c^*)\right]}{\partial w} > 0$.[32] This requires an increase in the marginal utility $v_x(x^*)$ and, by concavity of $v(x)$, a decrease in the optimal career break.

If the utility function is linear in consumption, then *career break is a decreasing function of the salary* also for a mother with a partner. In fact, in this case $\frac{\partial\left[\frac{w-sp}{\sqrt{n}} u_c(c^*)\right]}{\partial w} > 0$.[33]

Result 3: *A woman will choose to have a child if* $\beta > \tilde{\beta}$

Proof: Define

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[31] In fact, $v_x(x^*) = \frac{w-p}{\beta\sqrt{n}} u_c\big(c^*(x^*)\big)$and concavity of $v(x)$ implies that x^* decreases when β increases.

[32] In fact, $\frac{\partial\left[\frac{w-p}{\sqrt{n}} u_c(c^*)\right]}{\partial w} = \left[\frac{(w-p)(1-x)}{\sqrt{n}}\right] u_{cc}(c^*) + \frac{u_c(c^*)}{\sqrt{n}} = c^* u_{cc}(c^*) + \frac{u_c(c^*)}{\sqrt{n}}$ which is positive iff $-\frac{c^* u_{cc}(c^*)}{u_c(c^*)} < \frac{1}{\sqrt{n}}$. The last equality follows from the fact that if *I=0* then $c^* = \frac{(w-p)(1-x)}{\sqrt{n}}$

[33] The reason is that if $u_{cc}(c^*) = 0$ then $\frac{\partial\left[\frac{w-p}{\sqrt{n}} u_c(c^*)\right]}{\partial w} = \frac{u_c(c^*)}{\sqrt{n}}$ which is always positive. For a sufficiently concave utility function, it might be that $\frac{\partial\left[\frac{w-p}{\sqrt{n}} u_c(c^*)\right]}{\partial w} < 0$; in this case, the optimal career break increases with the mother's salary.

$$\Delta_w(\beta) = U_\beta^*(w) - U_0^*(w) =$$

$$= \frac{(w-p)\left(1-x^*(w,\beta)\right)+I\bar{w}}{\sqrt{n}} + \beta v\left(x^*(w,\beta)\right) - \frac{w+I\bar{w}}{\sqrt{1+I}}$$

First note that, $\lim_{\beta\to 0}\Delta_w(\beta) = -\frac{p}{\sqrt{n}} + (w+I\bar{w})\left(\frac{1}{\sqrt{n}} - \frac{1}{\sqrt{1+I}}\right) < 0$.[34] Intuitively, $U_\beta^*(w)$ – a mother's utility - is not continuous around $\beta = 0$. The reason is that as soon as a child is born, there is a 'fixed monetary cost' to be paid, which reduces mother's consumption. However, $\frac{d\Delta_w(\beta)}{d\beta} = v\left(x^*(w,\beta)\right) > 0$,[35] it follows, that there exists a value $\tilde{\beta}$ such that $\Delta_w(\beta)$ is positive for any $\beta > \tilde{\beta}$. This proves result 3.

Since $\tilde{\beta}$ increases with *w* (see footnote 32), a low educated woman will be more likely to have a child than a highly educated woman with the same preferences for parenting time.

Result 4: *A highly educated women with no children ($\beta = 0$) always chooses a high career job* ($q = \pi$).

Proof:

$$U_0^*(\pi w_H) - U_0^*(w_H) = w_H(\pi - 1) > 0$$

Result 5: *A highly educated mother chooses a low career job and a 'long' career break if $\beta > \bar{\beta}$.*

Proof:

Define

$$\Delta_\pi(\beta) = U_\beta^*(w_H) - U_\beta^*(\pi w_H)$$

$$= \frac{(w_H-p)\left(1-x^*(w_H,\beta)\right)+\beta v\left(x^*(w_H,\beta)\right) - (\pi w_H - p)\left(1-x^*(\pi w_H,\beta)\right)+\beta v\left(x^*(\pi w_H,\beta)\right)}{\sqrt{n}}$$

First note that, $\lim_{\beta\to 0}\Delta_w(\beta) = -\frac{w_H(\pi-1)}{\sqrt{n}} < 0$. Moreover, $\frac{d\Delta_\pi(\beta)}{d\beta} = v\left(x^*(w_H,\beta)\right) - v\left(x^*(\pi w_H,\beta)\right) > 0$.[36] Define $\bar{\beta}$ be such that $\Delta_\pi\left(\bar{\beta}\right) = 0$. It follows, that for any $\beta > \bar{\beta}$ the woman will prefer a low career job and a 'long' career break.

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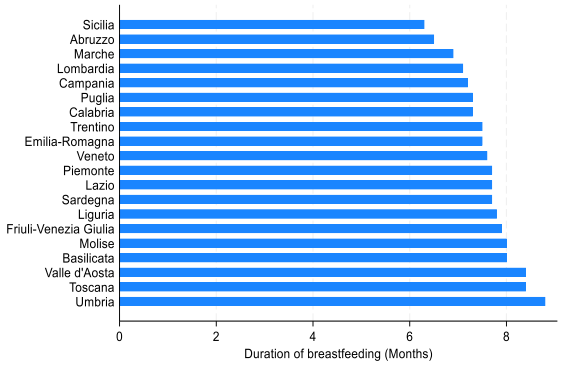
[34] This follows from continuity of $x^*(w,\beta)$, which implies $\lim_{\beta\to 0} x^*(w,\beta) = 0$

[35] In fact, $\frac{d\Delta_w(\beta)}{d\beta} = -\frac{(w-p)}{\sqrt{n}}\frac{dx^*}{d\beta} + v(x^*) + \beta v_x(x^*)\frac{dx^*}{d\beta} = v\left(x^*(w,\beta)\right)$. The last step follows from $\frac{(w-p)}{\sqrt{n}} = \beta v_x\left(x^*\right)$. Note that a higher value of *w* implies a lower value of x^* and $v(x^*)$, therefore a flatter $\Delta_w(\beta)$ which means a higher $\tilde{\beta}$. Similarly, a higher value of *p* (or a higher number of children) implies a lower $\tilde{\beta}$.

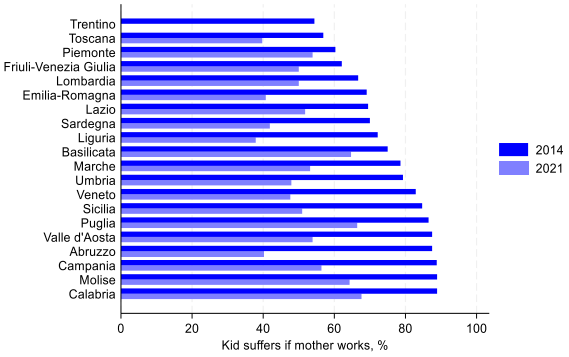
[36] In fact, $\frac{d\Delta_\pi(\beta)}{d\beta} = v\left(x^*(w_H,\beta)\right) - v\left(x^*(\pi w_H,\beta)\right) - \beta\left[v_x\left(x^*(w_H,\beta)\right)\frac{dx^*}{d\beta} - v_x\left(x^*(\pi w_H,\beta)\right)\frac{dx^*}{d\beta}\right] - (w_H - p)\frac{dx^*}{d\beta} - v_x(\pi w_H - p)\frac{dx^*}{d\beta} = v\left(x^*(w_H,\beta)\right) - v\left(x^*(\pi w_H,\beta)\right) > 0$ where once again we have used $\beta v_x\left(x^*(w,\beta)\right) = w - p$. The last inequality follows from $x^*(w_H,\beta) > x^*(\pi w_H,\beta)$.

Figure B.1. Local characteristics, at regional level

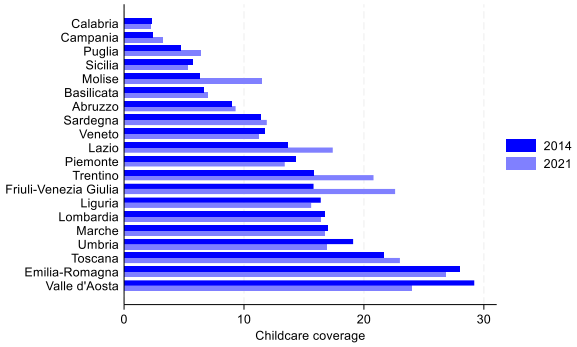
A. Average duration of breastfeeding



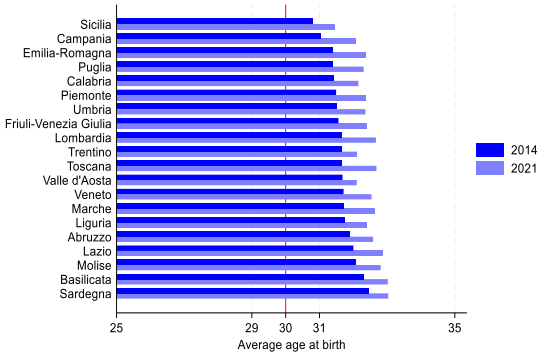
B. Kid suffers if mother works (%)



C. Childcare coverage



D. Woman's average age at birth



E. Miscarriages / Live births, %

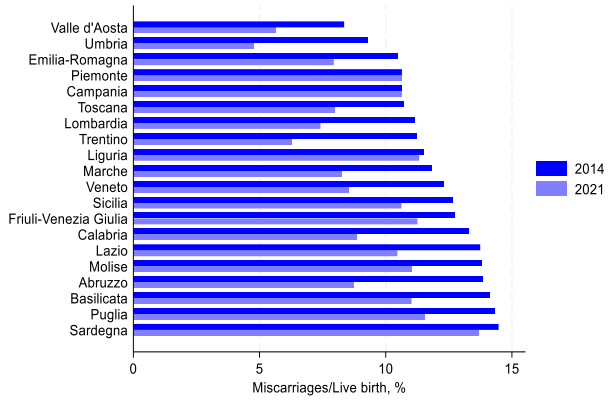
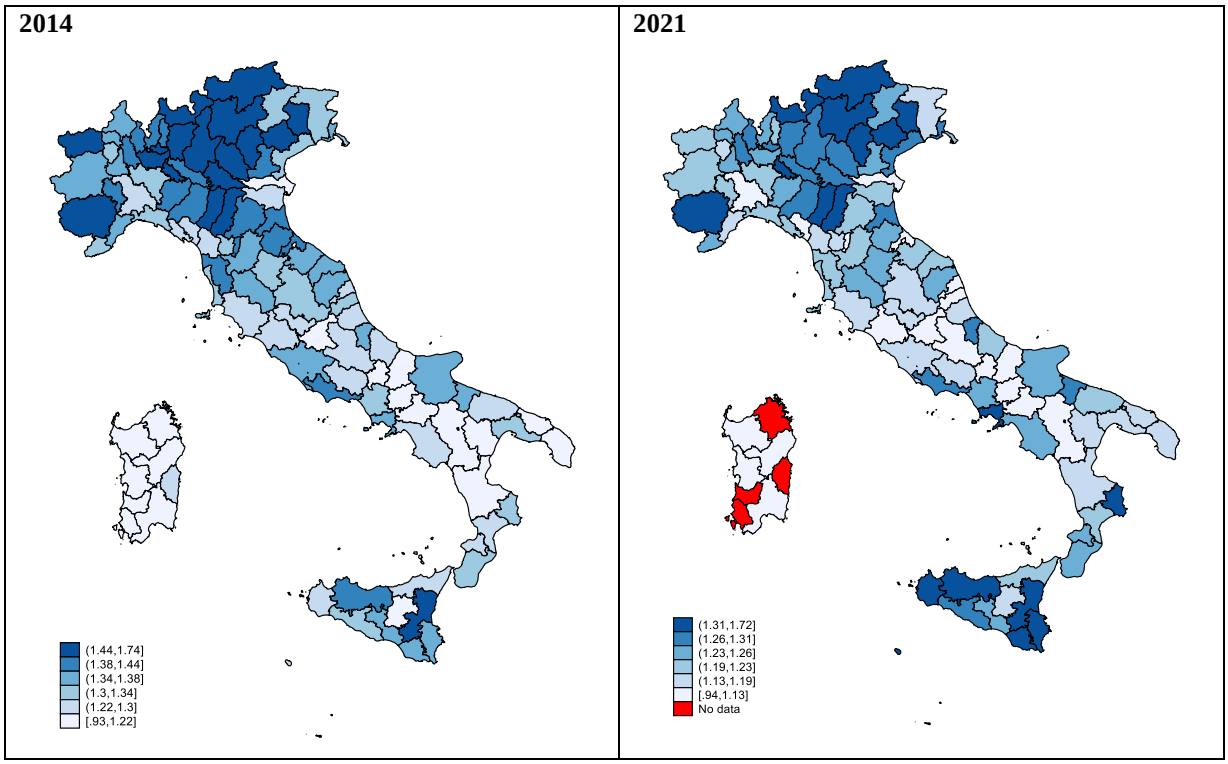
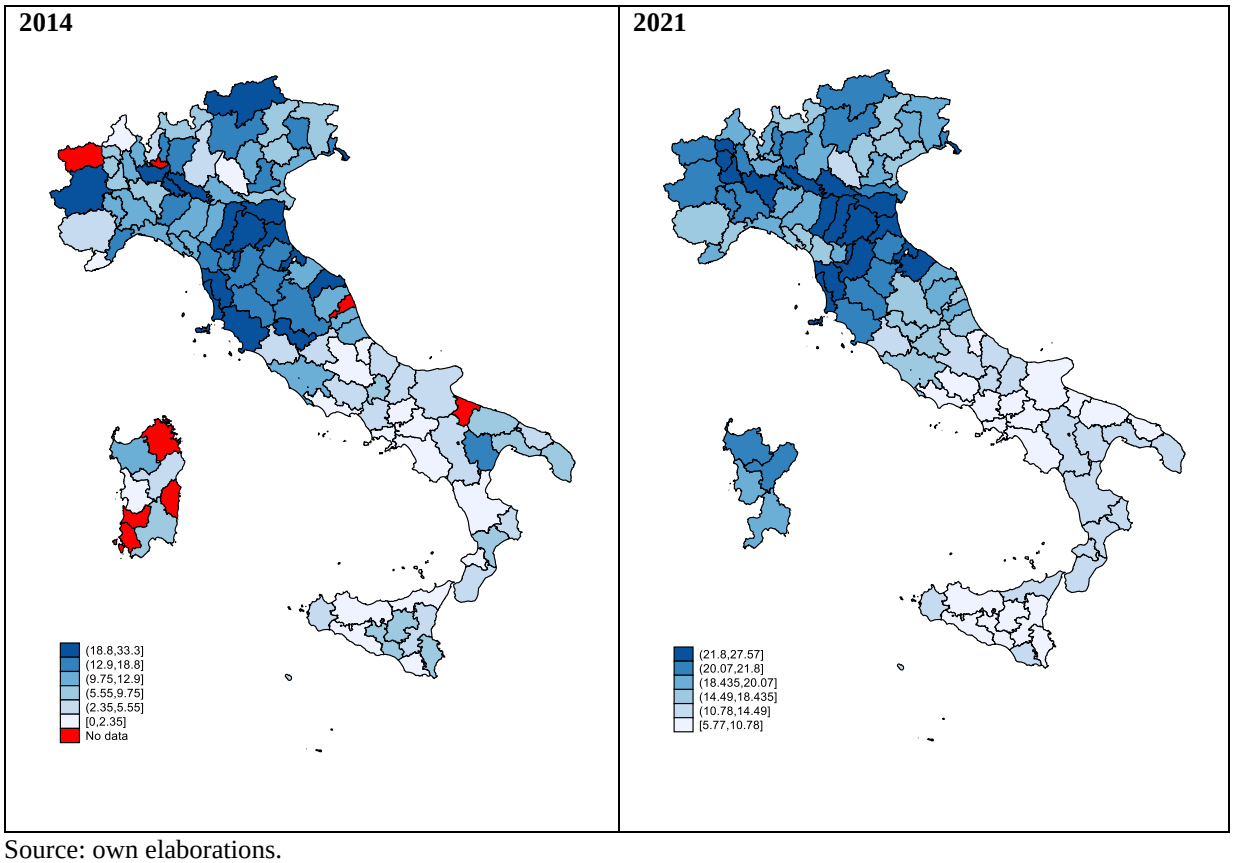


Figure B.2. Local characteristics, at province level

A. Average number of children per woman



B. Female share in local administration



Source: own elaborations.

Table B.1. Variables' definition

Variable	Description
Mother	=1 if a woman has at least one child, 0 otherwise
Maternity (Model I)	Number of months continuously out of work, defined only for women on a regular contract before and after the childbirth.
Career break (Model II)	Ranges from 0 to 5: 0 if a woman was not covered by contract or voluntarily decided not to take the maternity leave; 1 if a woman stayed out of work for 1-5 months around childbirth; 2 if a woman stayed out of work for 6-11 months, 3 if she retained from work for 12-36 months, 4 if a woman did not get back to work after childbirth; 5 if a woman worked neither before nor right after childbirth*, but does not consider herself to be inactive.
Dropout (Model III)	=1 if a woman did not get back to work after childbirth, or if she worked neither before nor right after childbirth without considering herself to be inactive (Career break=4 or 5), 0 otherwise.
Individual	
Preferences for parenting time	Are proxied by the desired number of children, which is equal to the actual number of children if a woman declares not be willing to have other kids in the next three years. If instead she reports to be planning to have a child soon, the desired number of children would be equal to: 'actual no. of children +1'
Age	In years, at the moment of the interview
Education	Woman's years of education
Work related	
Occupation medium/high	=1 if Medium to high-skill occupation; 0 otherwise
Public sector	=1 if works in public administration, education, or health sector, 0 otherwise
Time to work	Time needed to reach the workplace, in minutes (in 2014 survey)
Work mobility	1 if not willing to give up part of the Wage to get the chance of working from home, 0 otherwise
Household	
Married	=1 if married, 0 otherwise
Collaborative partner	Is an indicator constructed by summing up information about how often a partner helps with cooking, cleaning the house and care work [for each of those 1 corresponds to never, 2 rarely, 3 sometimes, 4 regularly]. A synthetic measure ranges from 0 (for women without partner) to 12 (when the maximum values of 4 are reported for each of the components)
Equivalised family income	Monthly household income divided by the square root of the household size
Local	
Age at birth	Mean age of a woman at birth (Istat, 2014 and 2021).
Miscarriages/Live births	Number of miscarriages / Number of live births, %, by region (Istat 2014, 2021)
Average number of children per woman	Average number of children per woman, by province (Istat 2014, 2021)
Breastfeeding	Average duration of breastfeeding, by region (Istat 2014), Percentage of children who enjoy breastfeeding at the age of 12-15 months (Ministry of Health, 2021)
Child suffers	Percentage of people who agree/strongly agree with the following statement: "a pre-school child is likely to suffer if his/her mother works", by region (EVS 2008, 2018)
Childcare coverage	Percentage of kids aged 0-3 covered by kindergartens, by region (ISTAT average data 2004-2014; 2011-2021)
Female share in local administration	Share of women elected in the administrative elections (2000, 2007), by province (Ministry of Interior)
Female inactivity	Female inactivity rate, by province (ISTAT average data, 2004-2014; 2011-2021)

* The questionnaire refers to the period which starts two months before and ends three months after childbirth, which corresponds to the obligatory maternity leave in Italy.

Source: Plus 2014 and 2021, unless otherwise specified.

Table B.2. Summary statistics

	Year 2014					Year 2021				
Variable	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Maternity leave	4092	6.26	4.94	0	36	1883	4.92	4.36	0	46
Career break	7504	2.55	1.71	0	5	3953	2.6	1.76	0	5
Dropout	7504	.38	.48	0	1	3953	.46	.5	0	1
Desired number of children	19377	1.11	.99	0	6	16900	.86	.93	0	6
Education	19377	13.29	3.31	5	20	16900	14.46	2.78	5	20
Age	19377	33.85	8.05	22	50	16900	32.23	7.87	22	50
Occupation medium/high	19377	.68	.47	0	1	16900	.62	.49	0	1
Public sector	19377	.17	.37	0	1	16900	.12	.32	0	1
Work mobility†	19377	8.23	15.93	0	240	16900	.31	.46	0	1
Married	19377	.53	.5	0	1	16900	.37	.48	0	1
Collaborative partner	19377	2.74	2.92	0	10	16900	4.71	4.89	0	12
Equivalised family income	16298	1.13	.68	.14	7	15303	1.39	.83	.18	7
Miscarriages/Live births	19377	12.06	1.43	8.35	14.47	15083	9.5	1.86	4.78	13.68
Age at birth	19377	31.56	.39	30.79	32.45	16900	32.41	.56	30.7	33.3
Aver.num._children/woman	19377	1.35	.11	.93	1.74	16900	1.24	.1	.94	1.72
Fem share_local administr.	18802	10.18	7.71	0	33.3	16775	15.98	5.41	5.77	27.57
Childcare coverage	19377	12.28	7.05	2.3	29.2	16900	13.01	7.16	2.2	26.8
Kid suffers if mother works	19377	75.23	10.93	54.4	88.9	16900	51.81	8.26	37.9	80.96
Use of breastfeeding†	19377	7.42	.56	6.3	8.8	16649	36.54	7.16	24.8	49.7
Female inactivity	19377	.49	.11	.33	.7	16900	45.04	12.04	29.73	70.51

Note: † Variable definition differs between the two years, see Table B.1.
Several outliers have been dropped from the subsample of women aged 22-50. These include women reporting 0 years of education (N=10/0 in 2014/2021), and those with an actual/desired number of children greater than 5/6 (N=18/2 in 2014/2021).
Source: own elaborations.

Table B.3. Pairwise correlations between local characteristics

Year 2014

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Miscarriages/Live births	1.00							
Age at birth	0.40*	1.00						
Childcare coverage	-0.46*	0.32*	1.00					
Kid suffers if mother works	0.31*	-0.40*	-0.75*	1.00				
Breastfeeding use	-0.19*	0.50*	0.41*	-0.44*	1.00			
Average number of children per woman	-0.49*	-0.28*	0.38*	-0.36*	-0.17*	1.00		
Female share in local administration	-0.39*	0.25*	0.75*	-0.63*	0.37*	0.35*	1.00	
Female inactivity rates	0.42*	-0.43*	-0.88*	0.75*	-0.40*	-0.43*	-0.74*	1.00

Year 2021

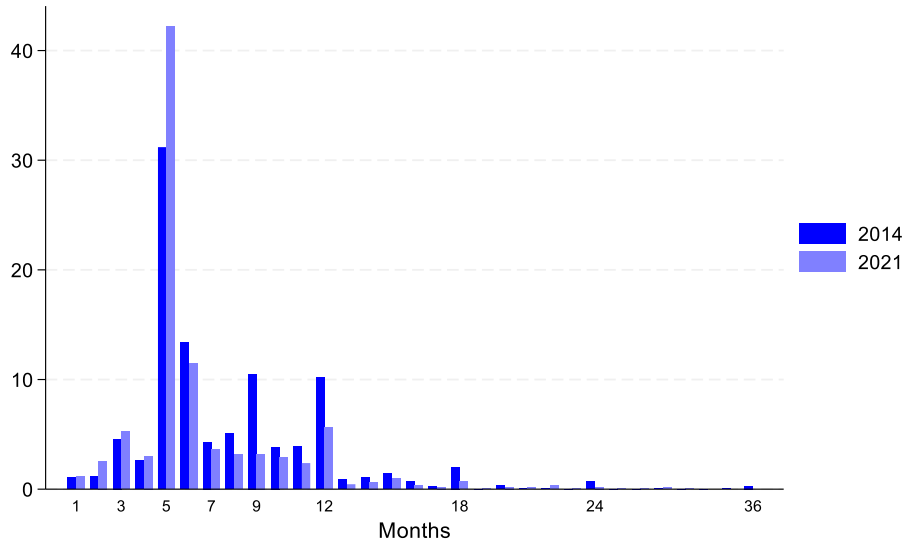
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Miscarriages/Live births	1.00							
Age at birth	-0.06*	1.00						
Childcare coverage	-0.41*	0.49*	1.00					
Kid suffers if mother works	0.21*	-0.22*	-0.58*	1.00				
Breastfeeding use	-0.22*	0.58*	0.87*	-0.49*	1.00			
Average number of children per woman	-0.39*	-0.53*	-0.05*	0.04*	-0.19*	1.00		
Female share in local administration	-0.41*	0.41*	0.82*	-0.54*	0.78*	-0.10*	1.00	
Female inactivity rates	0.45*	-0.57*	-0.85*	0.54*	-0.83*	0.08*	-0.86*	1.00

Note: *p<0.05
Source: own elaborations.

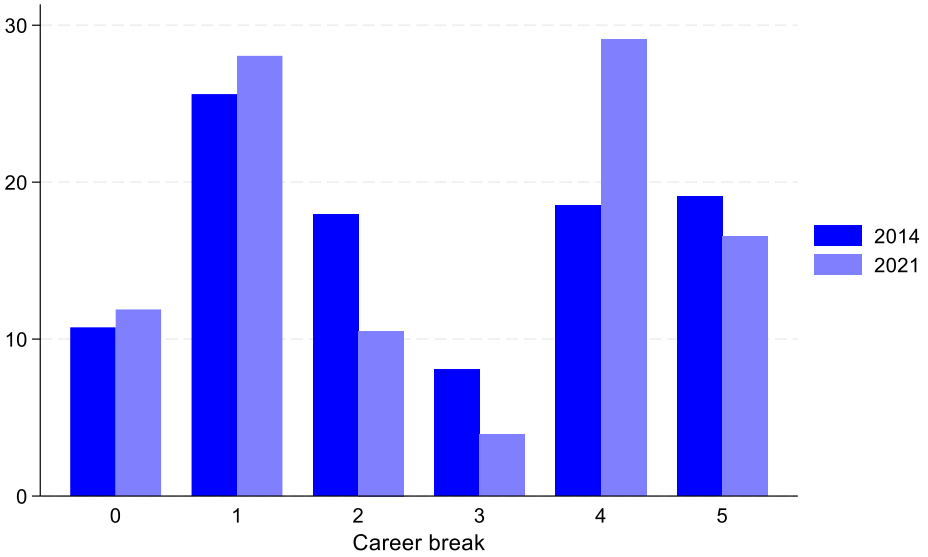
Figures and Tables

Figure 1. Absence from work after childbirth

Panel A. *Maternity leave for mothers on a regular contract*



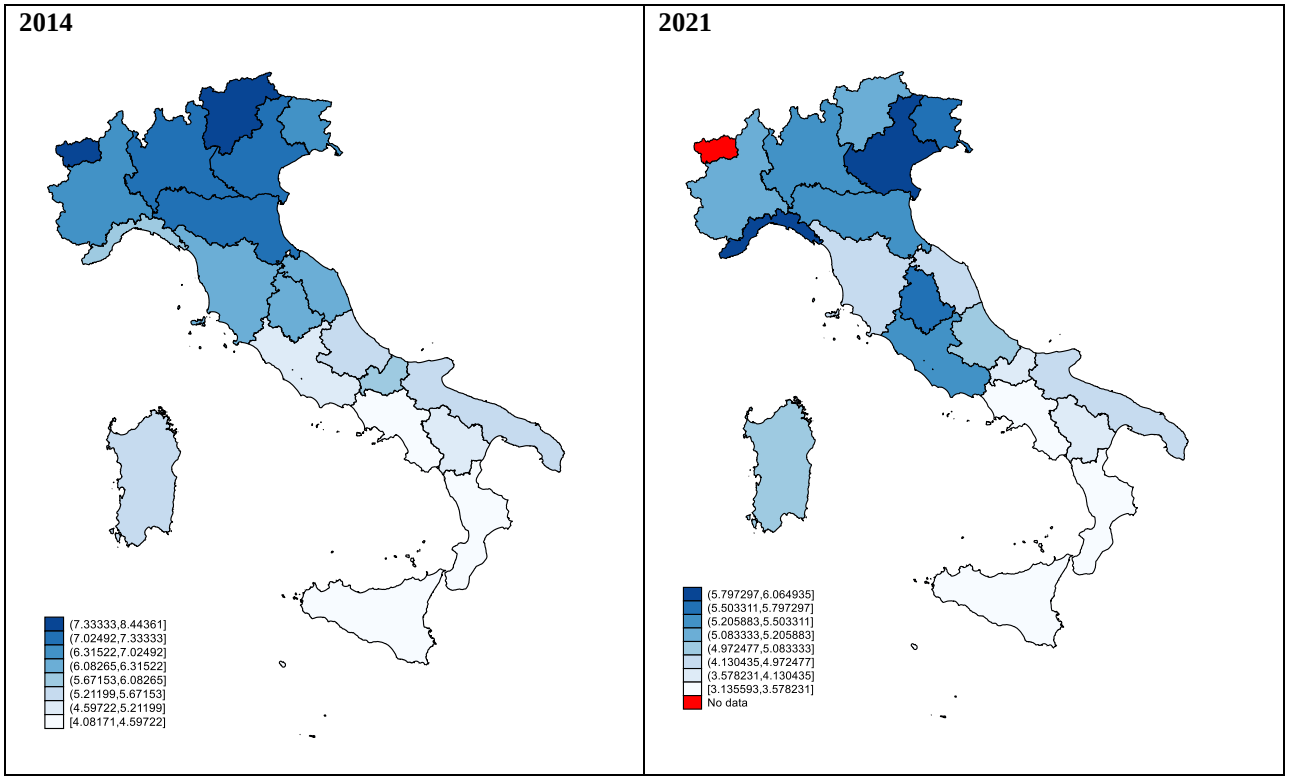
Panel B. *Career break for all mothers aged 22-50†*



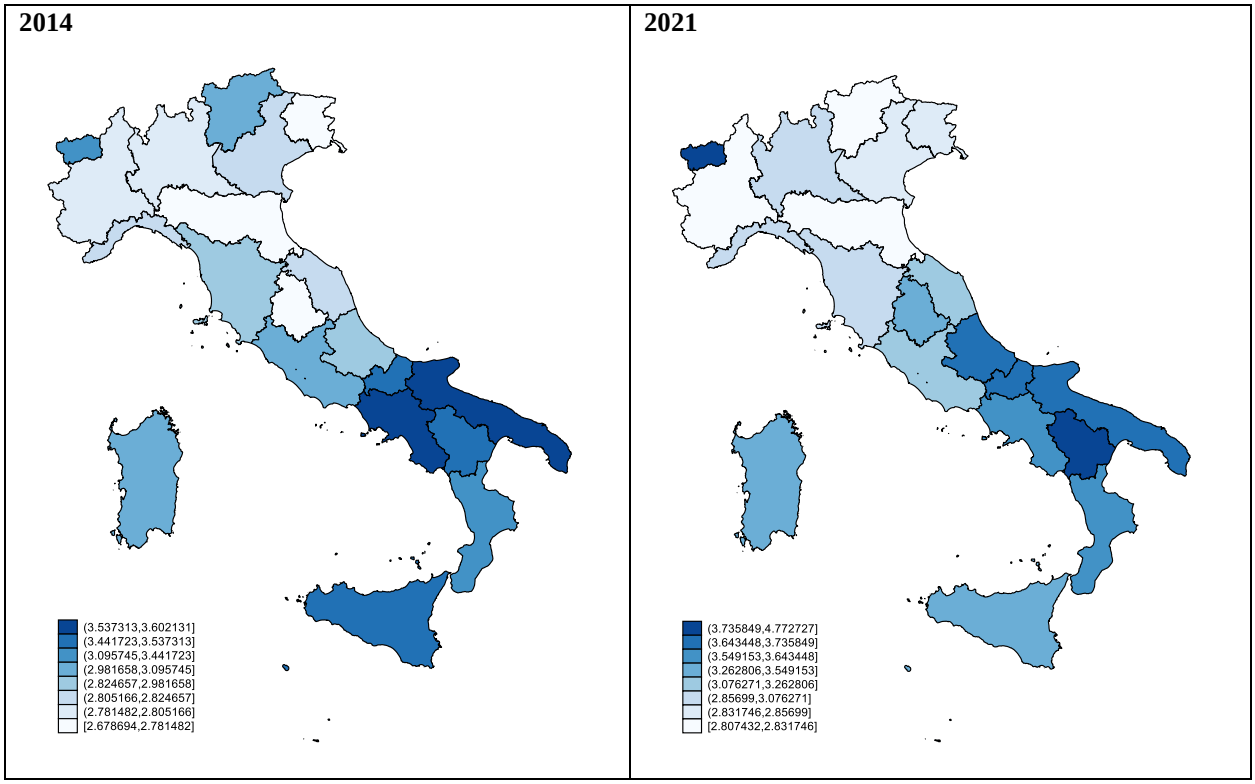
Note: † **0** did not make use or was not entitled to maternity leave; **1** stayed out of work for 1-5 months; **2** 6-11 months; **3** 12-36 months; **4** did not come back to work after childbirth; **5** worked neither before nor after childbirth but does not consider herself to be inactive at the moment of the interview.
Source: own elaborations.

Figure 2. Maternity leave *versus* career break, by Italian regions

A. Average maternity leave



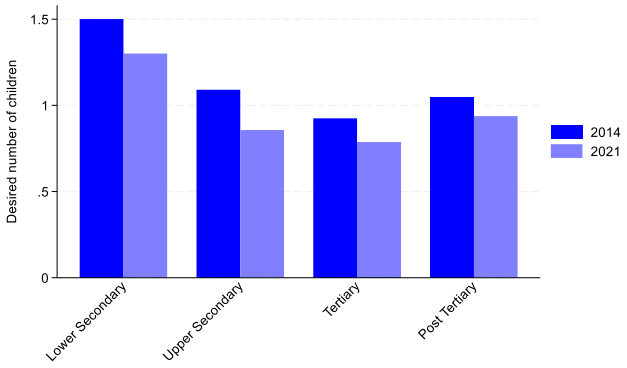
B. Average career break proxy



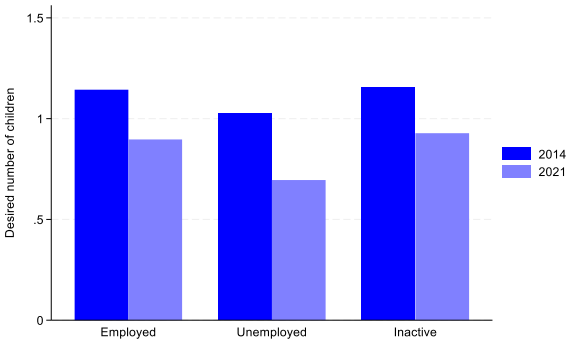
Source: own elaborations.

Figure 3. Variation of the desired number of children between different groups of women

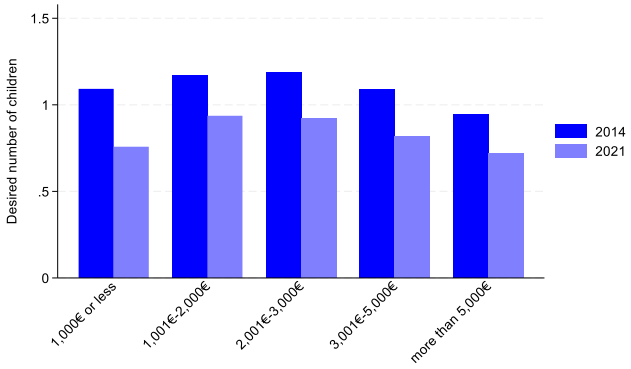
A. By level of education



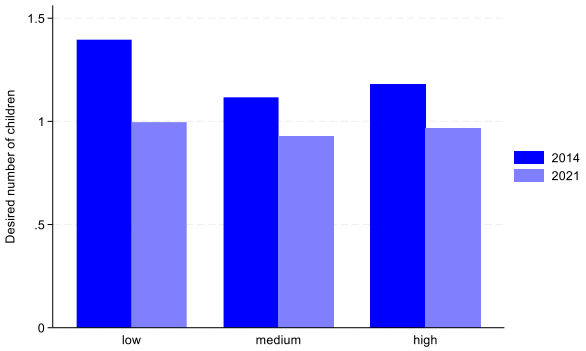
B. By employment status



C. By family income



D. By occupation

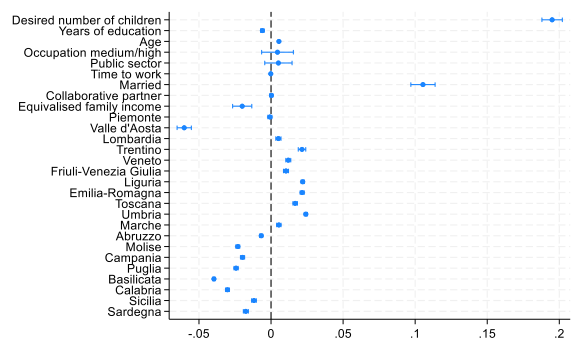


Source: own elaborations.

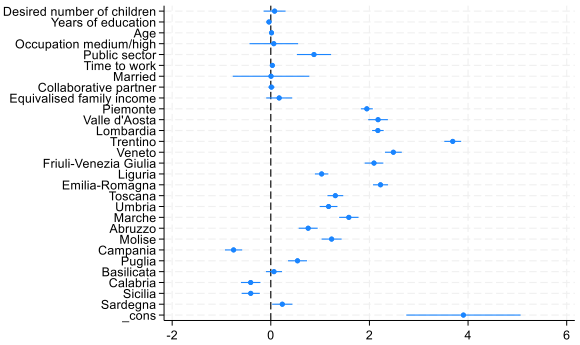
Figure 4. Maternity leave duration: women on a regular contract

Year 2014

A. Motherhood decision, average marginal effects

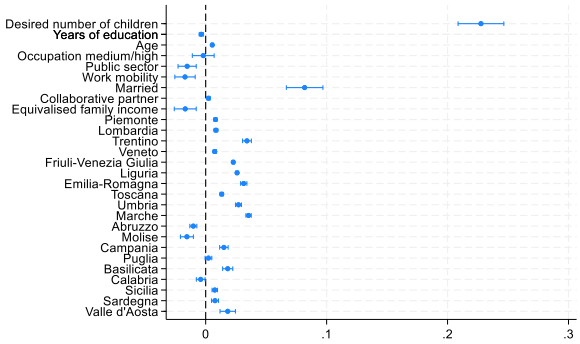


B. The duration of maternity leave, coefficients

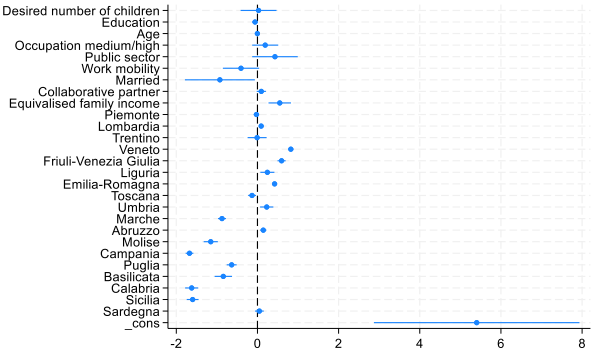


Year 2021

C. Motherhood decision, average marginal effects



D. The duration of maternity leave, coefficients

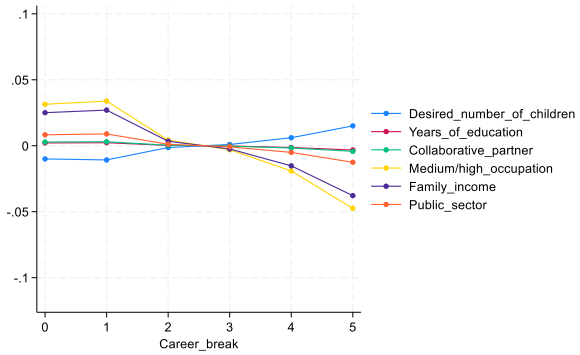


Note: Lazio was taken as a baseline region.

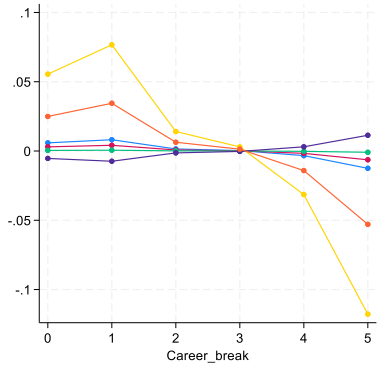
Source: own elaborations.

Figure 5. Career break: all mothers aged 22-50, average marginal effects for the key variables of interest

A. Year 2014



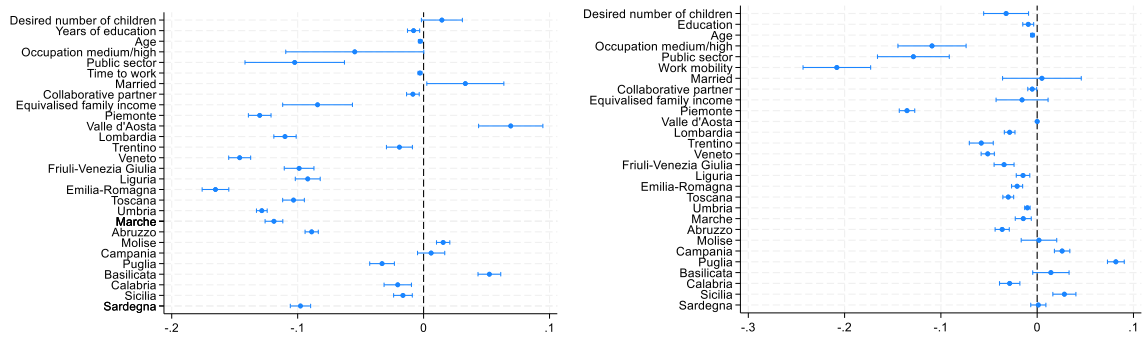
B. Year 2021



Source: own elaborations.

Figure 6. Dropout: average marginal effects, all mothers aged 22-50

A. Year 2014 **B. Year 2021**



Source: own elaborations.

Table 1. Desired versus actual number of children per woman

A. 2014

Actual Nch \ Desired Nch	0	1	2	3	4	5†	6	7	8	10	11	12	Total
0	**6.500**	**3.462**	**0**	**0**	**0**	**0**	0	0	0	0	0	0	9.962
1	**0**	**2.404**	**743**	**0**	**0**	**0**	0	0	0	0	0	0	3.147
2	**0**	**0**	**4.841**	**156**	**0**	**0**	0	0	0	0	0	0	4.997
3	**0**	**0**	**0**	**1.080**	**17**	**0**	0	0	0	0	0	0	1.097
4	**0**	**0**	**0**	**0**	**139**	**6**	0	0	0	0	0	0	145
5	**0**	**0**	**0**	**0**	**0**	**32**	7	0	0	0	0	0	39
6	0	0	0	0	0	0	2	1	0	0	0	0	3
7	0	0	0	0	0	0	0	3	2	0	0	0	5
10	0	0	0	0	0	0	0	0	0	1	0	0	1
11	0	0	0	0	0	0	0	0	0	0	3	0	3
12	0	0	0	0	0	0	0	0	0	0	0	6	6
Total	6.500	5.866	5.584	1.236	156	38	9	4	2	1	3	6	19.405

B. 2021

Actual Nch \ Desired Nch	0	1	2	3	4	5†	6	7	Total
0	**7.326**	**4.049**	**0**	**0**	**0**	**0**	0	0	11.375
1	**0**	**1.630**	**887**	**0**	**0**	**0**	0	0	2.517
2	**0**	**0**	**2.012**	**514**	**0**	**0**	0	0	2.526
3	**0**	**0**	**0**	**343**	**92**	**0**	0	0	435
4	**0**	**0**	**0**	**0**	**36**	**5**	0	0	41
5	**0**	**0**	**0**	**0**	**0**	**3**	3	0	6
6	0	0	0	0	0	0	1	0	1
7	0	0	0	0	0	0	0	1	1
Total	7,326	5,679	2,899	857	128	8	4	1	16,902†

Note: † the number of desired children has been reduced to the maximum of 5 in our estimation sample, as going beyond that number is quite atypical nowadays, so we treat those observations as outliers.

Source: own elaborations.

Table 2. Comparison between the three models

A. Year 2014

	Model I Maternity leave duration (OLS)	**Model II** Career break (Ordered Probit)	**Model III** Dropout (Probit)	**Mother** (Probit)
VARIABLES	Coefficients		Average marginal effects	
Desired number of children	0.077	0.057***	0.015*	0.195***
	(0.114)	(0.021)	(0.008)	(0.004)
Years of education	-0.037	-0.012**	-0.008***	-0.006***
	(0.024)	(0.006)	(0.002)	(0.001)
Age	0.015	-0.003*	-0.003***	0.005***
	(0.011)	(0.002)	(0.001)	(0.000)
Occupation medium/high	0.061	-0.179***	-0.055*	0.005
	(0.251)	(0.066)	(0.028)	(0.006)
Public sector	0.876***	-0.047	-0.102***	0.005
	(0.177)	(0.035)	(0.020)	(0.005)
Time to work	0.031***	-0.002	-0.003***	-0.0002***
	(0.009)	(0.001)	(0.001)	(0.000)
Married	0.005	0.037	0.033**	0.106***
	(0.396)	(0.049)	(0.016)	(0.004)
Collaborative partner	0.013	-0.016***	-0.008***	0.000
	(0.033)	(0.006)	(0.003)	(0.001)
Equivalised family income	0.170	-0.143***	-0.084***	-0.020***
	(0.134)	(0.030)	(0.014)	(0.003)
Region fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Constant	3.906***		0.912***	-4.750***
	(0.591)		(0.125)	(0.126)
cut_1_1		-1.859***		
		(0.095)		
cut_1_2		-0.941***		
		(0.102)		
cut_1_3		-0.471***		
		(0.110)		
cut_1_4		-0.246**		
		(0.122)		
cut_1_5		0.336***		
		(0.129)		
atanhrho_12	-0.064	0.047	0.090	0.090
	(0.044)	(0.045)	(0.059)	(0.059)
Observations Equation 1	-	-	-	16,298
Observations Equation 2	4,092	7,504	7,504	-

B. Year 2021

VARIABLES	Model I Maternity leave duration (OLS)	Model II Career break (Ordered Probit)	Model III Dropout (Probit)	Mother (Probit)
	Coefficients		Average marginal effects	
Desired number of children	0.028	-0.044	-0.032***	0.228***
	(0.226)	(0.035)	(0.012)	(0.010)
Years of education	-0.059*	-0.022***	-0.009***	-0.004***
	(0.035)	(0.008)	(0.003)	(0.001)
Age	-0.002	-0.011***	-0.005***	0.005***
	(0.019)	(0.002)	(0.001)	(0.000)
Occupation medium/high	0.191	-0.413***	-0.109***	-0.002
	(0.164)	(0.053)	(0.018*	(0.005)
Public sector	0.432	-0.186***	-0.129***	-0.015***
	(0.286)	(0.048)	(0.019)	(0.004)
Work mobility	-0.406*	-0.387***	-0.208***	-0.017***
	(0.228)	(0.058)	(0.018)	(0.004)
Married	-0.926**	-0.102**	0.005	0.082***
	(0.440)	(0.051)	(0.021)	(0.008)
Collaborative partner	0.095	-0.003	-0.005**	0.002***
	(0.058)	(0.008)	(0.002)	(0.001)
Equivalised family income	0.550***	0.040	-0.016	-0.017***
	(0.141)	(0.033)	(0.014)	(0.005)
Region fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Constant	5.403***		1.761***	-5.425***
	(1.292)		(0.230)	(0.502)
cut_1_1		-2.701***		
		(0.184)		
cut_1_2		-1.722***		
		(0.194)		
cut_1_3		-1.437***		
		(0.206)		
cut_1_4		-1.332***		
		(0.211)		
cut_1_5		-0.383*		
		(0.204)		
atanhrho_12	-0.207***	-0.116**	-0.095	-0.095
	(0.079)	(0.050)	(0.064)	(0.064)
Observations Equation 1	-	-	-	15,303
Observations Equation 2	1,883	3,953	3,953	-

C. Adding the interaction between Desired number of children and Years of education, year 2021†

VARIABLES	**Model I** Maternity leave duration (OLS)	**Model II** Career break (Ordered Probit)	**Model III** Dropout (Probit)
Desired number of children	-0.467	0.016	0.011
	(0.330)	(0.051)	(0.046)
Years of education	-0.157**	-0.008	-0.001
	(0.067)	(0.015)	(0.013)
Desired number of children*Years of education	0.103*	-0.015	-0.030***
	(0.059)	(0.012)	(0.011)

Note: † when interactions are used, the variables PPT and Years of education are centered, respectively, around 1 child/10 years. The same estimation strategy is used for the three models (recursive system of equations), with the only difference that OLS is employed at the second stage for Model I, ordered probit for Model II and Probit for Model III.
Standard errors in parenthesis, clustered at regional level. ***p<0.01, **p<0.05, *p<0.1
Source: own elaborations.

Table 3. The role of local characteristics

A. Year 2014

VARIABLES	Model I	Model II	Model III	
	Maternity leave duration (OLS)	Career break (Ordered Probit)	Dropout (Probit)	Mother (Probit)
	Coefficients		Average marginal effects	
Region characteristics†				
Miscarriages/Live births	-0.308**	0.013	0.019*	-0.007***
	(0.150)	(0.013)	(0.009)	(0.002)
Age at birth	0.743	-0.028	-0.016	0.004
	(0.921)	(0.058)	(0.042)	(0.010)
Childcare coverage	0.104***	-0.008***	-0.006***	0.002***
	(0.026)	(0.002)	(0.001)	(0.000)
Kid suffers if mother works	-0.058**	0.001	0.002*	-0.001***
	(0.023)	(0.002)	(0.001)	(0.000)
Duration of breastfeeding	0.319	-0.017	-0.016	0.011**
	(0.386)	(0.025)	(0.017)	(0.004)
Province characteristics‡				
Average number of children/women	7.329***	0.060	-0.180**	0.078***
	(1.136)	(0.157)	(0.082)	(0.013)
Female share in local administration	0.068***	-0.002	-0.004***	0.001***
	(0.016)	(0.002)	(0.001)	(0.0002)
Female inactivity rate	-0.086***	0.004***	0.004***	-0.001***
	(0.010)	(0.001)	(0.001)	(0.0001)

B. Year 2021

VARIABLES	Model I	Model II	Model III	
	Maternity leave duration (OLS)	Career break (Ordered Probit)	Dropout (Probit)	Mother (Probit)
	Coefficients		Average marginal effects	
Region characteristics†				
Miscarriages/Live births	-0.095	0.018	0.005	-0.002*
	(0.065)	(0.015)	(0.007)	(0.001)
Age at birth	1.242***	-0.025	-0.033***	-0.003
	(0.304)	(0.046)	(0.011)	(0.005)
Childcare coverage	0.078***	-0.003	-0.002**	0.001*
	(0.019)	(0.003)	(0.001)	(0.000)
Kid suffers if mother works	-0.051***	0.002	0.002	-0.000
	(0.015)	(0.003)	(0.001)	(0.000)
Percentage of kids who enjoy breastfeeding at 12-15months	0.078***	-0.004	-0.003***	0.001
	(0.021)	(0.003)	(0.001)	(0.000)
Province characteristics‡				
Average number of children/women	-0.152	-0.429***	-0.088	0.032**
	(1.186)	(0.163)	(0.061)	(0.016)
Female share in local administration	0.098***	-0.007	-0.005***	0.001*
	(0.023)	(0.005)	(0.002)	(0.000)
Female inactivity rate	-0.057***	0.003	0.002***	-0.000
	(0.010)	(0.002)	(0.001)	(0.000)

Note: Local variables have been used interchangeably. ***p<0.01, **p<0.05, *p<0.1
Standard errors in parenthesis, clustered at the level of regions† or provinces ‡.
Source: own elaborations.