Workplace Peer Effects in Fertility Decisions*

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Abstract: *This paper studies the effects on individuals' fertility of the fertility behavior of their co-workers. Using matched employer-employee data from the Italian Social Security Institute (INPS) for the years 2016-2020, we estimate how the fertility rate among co-workers of the same age group and in the same occupation affects a worker's likelihood of having a child. We exploit the variation in workplace peer fertility induced by the Jobs Act reform, which weakened employment protection – and therefore reduced the fertility rate – for the employees affected, i.e. those in larger firms hired on open-ended contracts after 7 March 2015. Our analysis focuses on similar workers hired before the Jobs Act and uses the fraction of co-workers hired after 7 March 2015 as an instrumental variable for average peer fertility. We find that a 1-percentage-point reduction in the average peer fertility at year* t-1 *leads to a reduction in the individual probability of having a child at year* t *by 0.3 to 0.4 percentage points, or a 10% reduction in average fertility. Heterogeneity analysis suggests that while workplace peer effects may operate primarily through social influence and social norms, information sharing and career concerns tend to attenuate individuals' responses to the fertility of their co-workers, especially among women. Our findings also help to understand the potential spillovers that employment protection reforms may have on fertility rates through social interactions.*

JEL Classification: *C3; J13; J65; J41; M51.*

Keywords: *Fertility; Peer Effects; Instrumental Variables; Employment Protection Legislation.*

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1. Introduction

An abundant literature has explored how economic considerations affect fertility behavior (see for example, Becker, 1981; Francesconi, 2002; Adsera, 2005; Milligan, 2005; Lindo, 2010; Del Bono *et al.*, 2012; Cohen *et al.*, 2013; González, 2013; Lovenheim and Mumford, 2013; Currie and Schwandt, 2014; Dettling and Kearney, 2014; Huttunen and Kellokumpu, 2016; De Paola *et al.*, 2021; Clark and Lepinteur, 2022; Cumming and Dettling, 2023; Doepke *et al.*, 2023). However, the impact of social interactions on the decision to have children has been under-researched. While there is evidence that peers, such as classmates, friends, and relatives, may influence individual fertility choices (see e.g. Evans *et al.*, 1992; Bongaarts and Watkins 1996; Montgomery and Casterline, 1996; Kohler, 2001; Lyngstad and Prskawetz, 2010; Balbo and Barban, 2014; Kearney and Levine, 2015; Fletcher and Yakusheva, 2016; Buyukkececi *et al.*, 2020; Heissel, 2021), we still know very little on the role of workplace social interactions in shaping fertility decisions. This paper seeks to overcome this lacuna by examining the effects of co-workers' fertility on an individual's likelihood of having a child. The focus on the workplace is particularly relevant as people typically spend more time at work than at any other activity. In addition, social networks within the workplace can create a sense of community and shared values, possibly leading to a convergence in attitudes towards family planning. Moreover, looking at co-workers is especially significant in view of the increasing importance of work-life balance and the potential impact of workplace policies on family decisions.

To identify peer effects, we employ an instrumental variable (IV) approach, exploiting the weakening of employment protection owing to the Italian Jobs Act of 2015. The reform substantially reduced job security for employees on open-ended contracts hired after 7 March 2015 in firms with more than 15 employees, while leaving employment protection for those hired earlier and for those of smaller firms basically unchanged. De Paola *et al.* (2021) document that by lessening job security the Jobs Act reduced the average fertility of the workers affected (those hired post-reform). Therefore, we focus on the fertility decisions of workers hired on open-ended contracts in large firms before 7 March 2015, for whom the reform had no direct impact but did affect them indirectly, through their degree of exposure to pre- and post-reform colleagues, a factor they have no control over and which we use to instrument co-workers' fertility choices. Thus, our identifying variation comes from comparing employees in firms with different shares of peers hired under the Jobs Act, hence with less job security, and characterized by lower fertility rates. We consider as an individual's peers the set of co-workers in the same establishment of the firm, in the same occupation and in the same age group.

Our empirical analysis exploits matched employer-employee yearly data provided by the Italian Social Security Institute (INPS) that cover the universe of individuals employed in the private sector, in the period 2016-2020. We supplement large-scale social security records with novel information from the Universal Child Allowance (*Assegno Unico e Universale*), a benefit introduced in 2022, which we use to compute and assign childbirth to mothers and fathers in our yearly panel. In the end, we have data on some 11 million female and male workers.

The results from our first stage regressions, which measure the effect of the reform on average fertility choices, are in line with the negative impact estimated in De Paola *et al.* (2021): if all peers in a group were

hired after the Jobs Act, the average fertility rate would be 1.9% lower. Our second stage estimates – our main findings – reveal that a 1-percentage-point decrease in peer fertility (resulting from an increased fraction of the less secure co-workers hired under the Jobs Act) lowers the likelihood of own fertility by 0.3 to 0.4 percentage points. This corresponds to a 10% reduction in the average fertility.

To make sure that our instrument is not capturing unobservable characteristics of firms correlated with workers' fertility decisions, we focus on firms with multiple establishments and exploit information on the specific establishment where each worker is employed. Within these firms, we conduct a placebo test using workers in different establishments of the same firm to construct an artificial, false peer fertility rate for each worker. Workers' fertility decisions should not be affected by changes in the fertility rates of peers with whom they do not interact directly. This placebo test demonstrates that the fertility rate of workers in other establishments of the same firm has no significant effect on the individual probability of having a child. This enhances confidence that we are not capturing a spurious correlation but a true causal relationship between peer fertility and individual childbearing decisions.

In the workplace, peer effects can work through various channels, including social influence, information sharing and career concerns. These mechanisms can influence individuals' perception of parenthood and their attitudes towards starting a family. Influence among colleagues can derive from social comparison, social norms, or emotional influence (Bernardi and Klärner, 2014; Montgomery and Casterline, 1996). Social comparison theory suggests that individuals tend to adapt their behavior to match those they perceive as being in similar social positions or sharing certain characteristics. In our context, colleagues who are parents can serve as positive role models. Social norms also play a role in shaping fertility decisions, as they condition what is considered to be typical or normal (Rindfuss *et al.*, 1988; Fletcher and Yakusheva, 2016). Individuals who have colleagues with children might see parenthood as a typical life event, increasing their likelihood of having a child. Further, emotional influence can impact on fertility decisions: interacting with colleagues who have newborn babies can evoke positive feelings and trigger an emotional desire to have children.

Information sharing (or social learning) among colleagues is another important factor in the workplace. Colleagues who are parents may share their experiences, challenges, and successful strategies for balancing work and family responsibilities. Individuals can learn about the consequences of becoming a parent from their peers and see how parenthood influences work and family life (Montgomery and Casterline, 1996; Kohler, 2001; Bernardi, 2003; Yakusheva and Fletcher, 2015). Positive examples of colleagues successfully managing both their careers and their family responsibilities may encourage others. Conversely, negative experiences shared by colleagues, such as struggles with work-life balance or career setbacks after having children, can create concern and deter individuals from parenthood. Career concerns can also operate in a more strategical way, through competition in internal labor markets (Ciliberto *et al.*, 2016). Co-workers' absences due to childbirth can create opportunities for promotion for individuals who remain childless as they may find it easier to receive professional advancements, for instance due to increased visibility and additional responsibilities.

We investigate these mechanisms by exploring various sources of heterogeneity. We analyze the data separately for men and women and considering peers of the same or the other gender. We find that the effect is smaller for women than for men and that it diminishes further when we consider the impact on women of female co-workers. For one thing, women may be more concerned about the potential implications of having a child on their career, particularly in the early stages, since childbirth often entails significant career interruptions for mothers, while fathers typically do not face equivalent costs (Kleven, Landais and Søgaard, 2019; Kleven *et al.*, 2020). For another, women may be more likely to learn from the negative childbearing experiences of their female colleagues.[1] Moreover, we show that peer effects are significantly smaller for women at first childbirth than at subsequent births, which gibes with the evidence that social learning is more likely to operate before individuals become parents rather than after they have already had children (Lyngstad and Prskawetz, 2010). Taken together, these findings strongly suggest that information sharing is an important driving factor.

We also find that women's response to peer fertility is significantly stronger in areas with more traditional than egalitarian gender norms, suggesting that social norms are a critical determinant of the peer effects on fertility decisions. But this result, as expected, does not hold for men. Finally, we examine the heterogeneous effects according to workers' tenure and wage levels to shed light on the role of career concerns as an alternative channel. We uncover a greater response among workers with more tenure or higher salaries, in keeping with the hypothesis that high-seniority and higher-salaried workers may feel less in competition with their peers and so more likely to adapt their fertility behavior to match the latter's.

Our paper adds to a growing literature on the importance of peer effects in shaping fertility behavior. Compared to previous empirical studies, we innovate with an instrumental variable approach to identify a casual effect. Earlier research on the impact of social interactions on fertility finds positive effects, but interpretation is often complicated by methodological limitations. Many studies fail to establish whether the effects observed are the result of the direct influence of peers or instead derive from contextual factors and selection, such as shared environment and common background characteristics.[2] A few papers have used instrumental variables to study the effects of social interactions on fertility. Cools and Hart (2017) use twin births and the gender composition of children as instrumental variables. However, these instruments can only affect subsequent fertility and are therefore informative only on transitions to higher parities. They do not allow analysis of the effects of social interactions during the initial transition to parenthood, which is when social interaction effects are presumably strongest.

Alternative instruments – based on the fertility of colleagues' siblings – have been used by Ciliberto *et al.* (2016) and Buyukkececi *et al.* (2020). The former analyze fertility decisions among co-workers using a

[1] On average, women report that parenthood is harder than they expected (Kuziemko *et al.*, 2018).

[2] For example, Kotte and Ludwig (2011) consider a number of controls to distinguish between direct sibling effects and contextual/selection effects; Balbo and Barban (2014), Kuziemko (2006), Lyngstad and Prskawetz (2010) and Pink *et al.* (2014) rely on random effects models, while Asphjell *et al.* (2013) uses placebo peer groups to determine whether the positive peer effects operate also through unrelated groups. Although these approaches help to control for spurious correlations within networks, they are not able to identify a causal impact and still leave open the possibility that the associations observed are due to contextual factors rather than direct influence of network partners.

game theory model that considers strategic interactions. They find that interactions among women working in the same establishment can lead to multiple equilibria, some characterized by positive and others by negative effects. Using Danish population data that allows linking individuals both to co-workers and to family members, they find overall negative effects, possibly due to career concerns. However, they also find considerable heterogeneity, with positive peer effects among workers of the same age and educational attainment. Buyukkececi *et al.* (2020) also find positive effects, using data from the system of social statistical datasets (SSD) of Statistics Netherlands, which enables them to identify both networks of colleagues at the workplace and networks of siblings in the family. They use information on the fertility of colleagues' siblings and of siblings' colleagues to identify colleague and sibling effects, respectively. Their findings indicate that colleagues' and siblings' fertility have positive effects on an individual's fertility. They also observe that colleague effects are more pronounced in female-female interactions, and that women are more strongly influenced by their siblings, regardless of gender. Note that the identification strategy employed in these papers is limited to individuals who have siblings, so the results cannot be extrapolated to the entire population. Our analysis, by contrast, uses an instrument that does not rely on siblings but on changes in workforce composition, and as a consequence our results can be more easily extended to the rest of the population.

Our paper also naturally contributes to the abundant literature on the impact of peers on almost all aspects of life, such as consumption (De Giorgi *et al.*, 2020), retirement and saving decisions (Duflo and Saez, 2002, 2003), financial decisions (Maturana and Nickerson, 2019; McCartney and Shah, 2022), risk aversion (Ahern *et al.*, 2014), educational choices and performance (Sacerdote, 2001; Zimmermann, 2003; Carrell *et al.*, 2009, 2013; Duflo *et al.*, 2011; Feld and Zölitz, 2017; Bertoni and Nisticò, 2023), labor supply, effort and productivity (Nicoletti *et al.*, 2018; Falk and Ichino, 2006; Mas and Moretti, 2009; Bandiera, Barankay and Rasul, 2010; Waldinger, 2012; Silver, 2021), wages and earnings (Battisti, 2017; Bertoni *et al.*, 2021; Hong and Lattanzio, 2022; Cornelissen *et al.*, 2017, 2023); health behavior (Agarwal *et al.* 2021; Fadlon and Nielsen, 2019), criminal behavior (Damn and Dustmann, 2014; Murphy, 2019), and parental leave take-up (Dahl, Løken and Mogstad 2012; Dottori *et al.* 2023, Welteke and Wrohlich, 2019).

Our findings carry important implications for policymakers and employers seeking to create family-friendly workplaces that support workers' fertility decisions. Shedding light on the role of co-workers in individual fertility decisions, we can help inform efforts to promote family-friendly policies and create supportive work environments. Finally, we provide further evidence on the impact of job insecurity on fertility choices. Building on De Paola, Nisticò and Scoppa (2021), and exploiting the administrative data provided by INPS, we not only confirm the negative effect of weakened employment protection but show that peer effects may amplify the impact.

The paper is organized as follows. In Section 2 we provide a description of the institutional setting and the data. In Section 3 we explain the identification strategy to investigate peer effects in fertility. The main results are presented in Section 4, along with some robustness checks (Section 4.1) and a falsification test (Section 4.2). Section 5 analyzes heterogeneous responses and Section 6 concludes.

2. Institutional Setting, Data and Descriptive Statistics

Italy, like many other advanced countries, is plagued by very low fertility, which has become a significant demographic concern. The fertility rate has been declining for many years and has now reached historically low levels. Various factors are involved, including societal changes, cultural shifts, poor support for work-life balance, and economic uncertainty. Italian traditions and cultural values make stability and financial security a priority for starting a family, but the labor market has become increasingly insecure compared to the past.

The Italian labor market has long been characterized by strict employment protection legislation (EPL). Initially, the EPL provisions applied mainly to firms with more than 15 employees, smaller firms being exempt. Although a 1990 law introduced some restrictions on dismissals for small firms, employees in larger firms continued to enjoy stronger protection. A first attempt to reduce dismissal costs for firms above the 15-employee cut-off was made through the Fornero reform of 2012, which limited reinstatement in the case of unjustified dismissal and reduced severance compensation. The obligation of reinstatement was still present in many situations, however. In 2015, the government of Matteo Renzi implemented the "Jobs Act" as a second attempt to address labor market segmentation in Italy. These reforms greatly restricted the possibility of reinstatement, making it applicable only in cases of discriminatory or specific disciplinary dismissal. Unfair dismissals were now to be compensated by a predetermined monetary payment based on seniority. The reduction in employment protection applied only to firms above the 15-employee threshold: specifically, to all new permanent hires in these firms after 7 March 2015, when the Law went into force, and not to workers hired previously, who are still covered by the reinstatement clause. Firms with a workforce below the 15-employee threshold did not face significant changes, as the reinstatement clause did not apply to them even before.

The passage of the Jobs Act, with its reduced employment protection for new hires, constitutes the basis for our instrumental variable. The analysis focuses specifically on workers in firms above the threshold. We examine how the fertility choices of workers not directly affected by the reform (hired prior to the Jobs Act) were influenced by the fertility rate at time *t-1* among all their co-workers. To deal with endogeneity problems, we instrument the peer fertility rate with the fraction of co-workers hired under the Jobs Act, who have less job security and a reduced propensity to have children.

Our analysis relies on a matched employee-employer dataset, provided by the Italian Social Security Institute (INPS), which encompasses the universe of private-sector, non-agricultural firms with at least one employee.[3] In the cases in which the worker has multiple job contracts in a year, we keep only the primary job, i.e. the one with the highest annual earnings.[4] For each worker-firm record, we have access to detailed information on contract start and end dates, contract type (permanent vs. temporary, full-time vs. part-time), occupation type (blue-collar, white-collar, managerial), annual earnings, number of days worked, reasons for termination (e.g. layoff, resignation), and unique identifiers for both the worker and the firm, thanks to which

[3] These data cover the universe of labor contracts from the UNIEMENS modules, which all Italian firms must file with INPS.

[4] The few ties are solved by picking the primary job at random.

we can link these records to others containing essential details such as workers' gender, date of birth, citizenship, municipality of residence, ATECO-07 sector, and business location. Additionally, we observe a measure of the company workforce ("*forza aziendale*"), presented as full-time equivalent, on a yearly basis, which we use to identify the 15-employee threshold.[5]

To measure fertility, we take data from the Universal Child Allowance (*Assegno Unico e Universale*), introduced in 2022, payable to all families with children under the age of 21. This register offers details such as the identification codes of both mothers and fathers, and the child's date of birth. The high take-up rate (about 95%) for children born between 2015 and 2020 means that applications for this benefit can be taken as a reliable indicator of births at the individual level. We utilize this information to determine, in our yearly panel, the decision to have a child for each individual as the date of birth minus 9 months. Our outcome variable "Birth" is an indicator for individuals who had a child within a specific year during the period 2016-2020. We focus on fertility decisions by workers of reproductive age (women aged 16-46, men aged 16-56) hired in large firms before the Jobs Act and so not directly affected by the reform.

For each worker we can observe – using the unique firm identifier – every co-worker on an annual basis. This allows us to construct the worker's peer group at time *t*. In our main analysis, the peer group is defined as all workers of the same five-year age group employed in the same firm establishment (i.e. workplace), and in the same type of occupation (blue-collar, white-collar, manager) in a given year. Considering these specific characteristics, we can analyze the impact of peer fertility on individual fertility decisions within a well-defined and comparable group. Our main explanatory variable is the fertility rate of each worker's peer group at time *t-1*, which we build considering births among co-workers in the period 2015-2019.

Table A.1 presents descriptive statistics of the sample. We have 11,008,833 individual-year observations, 111,521 firms and 134,571 different workplaces. Our peer group definition yields 1,458,812 peer groups. During the period considered, 3.7% of the workers in our sample had a child. The percentage of female workers is 32.5%, the fraction of immigrant workers around 10.7%. On average, workers are 41 years old, have 7.6 years of tenure and 19.1 years of work experience. In our sample, 47% are blue-collar, 45% white collar, 6% managers. Only 15% work part-time. A large majority of our individuals (63.5%) work in the North of Italy, 19.4% in the Centre, and 17% in the South. The median size of the peer group (the number of co-workers in the same workplace, occupation, and age group) is 23, 16.7% of them hired after the implementation of the Jobs Act.

[5] As noted by Boeri and Garibaldi (2019), this measure is a good proxy of the measure adopted by the Italian labor courts, which considers the average number of full-time open-ended contracts in the last 6 months, the full time equivalent of the number of part-time open-ended contracts in the last 6 months, and the average number of fixed-term employees hired in the last 24 months weighted by their effective job duration.

3. Identification Strategy

Our analysis offers empirical evidence on how the fertility decisions of an individual are influenced by the fertility of his/her co-workers (peers). Since the aim is to identify peer effects, we need to tackle the common econometric challenges associated with this issue, as described by Manski (1993) and Lyle (2007). The first challenge is the "reflection" problem, i.e. the fact that fertility among peers is typically determined simultaneously, making it difficult to distinguish the influence of peers on the subject's fertility decisions from the influence of the subject's decisions on peers. The second challenge involves "correlated effects," wherein common unobservable characteristics at the group level (those specific to the workplace, say) may affect the fertility decisions of each individual in the group and potentially confound the relationship between peer fertility and individual fertility outcomes. The third challenge relates to the issue of selection. Peer groups are typically formed endogenously, individuals tending to associate with others who have similar characteristics. If these characteristics are not observable but affect the fertility outcome, the estimation of the peer effect might suffer from selection bias.

Analytically, we regress an individual's probability of having a child on the average fertility of the group of peers in the workplace using the following equation:

$$Child_{it} = \beta_0 + \beta_1 PeerFertilityRate_{it-1} + \beta_2 X_{it} + u_{it} \quad [1]$$

where the dependent variable $Child_{it}$ is our measure of fertility, which takes the value 1 if individual *i* in year *t* has conceived a child and value 0 otherwise, and $PeerFertilityRate_{it-1}$ is the fertility rate at time *t-1* among all the co-workers of individual *i* in the same workplace (i.e. establishment), in the same age group (<=20, 21-25, 26-30, 31-35, 36-40, >40) and in the same occupation (blue collar, white collar, manager). β_1 may not provide a reliable estimate of the impact of peers because of the correlation between $PeerFertilityRate$ and the error term.

Our identification strategy is an instrumental variable approach. By employing an instrument that impacts on peers' fertility rate but does not directly affect individual fertility behavior, we can establish a causal relationship. To this end, we leverage the Jobs Act reform of 2015, which has been shown to have reduced fertility rates by weakening employment protection for newly hired employees (De Paola, Nisticò and Scoppa, 2021). More specifically, we investigate how the fertility of workers who were not directly affected by the Jobs Act and were employed in large firms during the period 2016-2020 responded to the lower average fertility among their peers hired after the reform. We thus estimate equation 1 with a two-stage-least-squares (2SLS) estimator.

In the first stage equation we assume that $PeerFertilityRate$ is affected by the fraction of employees hired under the new Jobs Act regime and estimate the following equation:

$$PeerFertilityRate_{it} = \pi_0 + \pi_1 Fraction_JobsActPeers_{it} + \pi_2 X_{it} + e_{it} \quad [2]$$

Our hypothesis is: the greater the number of employees hired under the Jobs Act in a firm, the lower the fertility rate; that is, π_1 is negative. To account for other possible determinants of peers' fertility rate, in the equation we control for a number of characteristics of the peer group (the vector *X*), such as average age, average tenure, fraction of women, fraction of immigrants, and so on.

We first verify the relevance of our instrument estimating the first stage equation (results in Table 1). In column 1 of the table we run a specification with only controls at the individual and at the peer group level. In columns 2, 3 and 4 we progressively add year, region, and sector dummies. The estimate in column 4 indicates that if the fraction of peers hired under the Jobs Act were 100%, the average fertility rate in the group would be 1.9% lower. This effect, obtained with administrative data, is in line with the findings of De Paola, Nisticò and Scoppa (2021); using Labor Force Survey data, they estimate a 2-percentage-point reduction in the probability of having a child for women affected by the Jobs Act. The effect is highly significant statistically, and the corresponding F-stat of the first stage is above 1,000.

Since we focus on employees hired before the Jobs Act, we are confident that the instrument is exogenous; that is, that the fraction of peers hired under the Jobs Act has no direct influence on the decision of individual *i* to have a child or on its determinants. To further validate this assumption, we conduct a placebo test (see Table 4 in section 4.2).

In the second stage we use the predicted values of $PeerFertilityRate_{it}$ and estimate the following equation:

$$Child_{it} = \beta_0 + \beta_1 \widehat{PeerFertilityRate}_{it-1} + \beta_2 X_{it} + u_{it} \qquad [3]$$

where X_{it} is a vector of individual characteristics (female, age, age squared, tenure, experience, immigrant, type of occupation, region of residence, industrial sector dummies, etc.) and peer characteristics (% of female peers, % immigrant peers, % part-time peers, average peer tenure, and average peer experience), and u_{it} is an error term. Our estimator incorporates clustered standard errors at the firm level to account for potential within-firm correlations.

Therefore, the coefficient β_1 measures the causal impact of the peer fertility rate on the probability of having a child for an individual not directly affected by the Jobs Act.[6]

[6] Reduced-form estimates, reported in Table A.2 in the Appendix, show a significant negative effect of the fraction of co-workers hired under the Jobs Act on the probability of conceiving a child for workers hired before the Jobs Act.

Table 1. First Stage Estimates. Peer Fertility and Fraction of Peers Hired under Jobs Act

	(1)	(2)	(3)	(4)
	Peer Fertility Rate			
Fraction Jobs Act Peers	-0.0142***	-0.0189***	-0.0191***	-0.0188***
	(0.00041)	(0.00056)	(0.00055)	(0.00054)
Controls				
Individual controls	YES	YES	YES	YES
Peer group controls	YES	YES	YES	YES
Year dummies	NO	YES	YES	YES
Region dummies	NO	NO	YES	YES
Sector dummies (90)	NO	NO	NO	YES
Weak identification test				
Kleibergen-Paap rk Wald F-statistic	1182.13	1139.43	1218.67	1195.91
Weak-instrument-robust inference				
Anderson-Rubin Wald test p-value	0.00000	0.00000	0.00000	0.00000
Observations	11,008,833	11,008,833	11,008,833	11,008,833

Notes: Each column reports estimates from OLS regression. The dependent variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Individual controls: Female, Age, Age Squared, Immigrant, Tenure, Experience, Part time. Peer group controls: % Females, % Immigrants, Avg. Tenure, Avg. Experience, % Part time. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

4. Main Results

Table 2 reports the main results concerning the effect of co-workers on individual fertility, obtained by estimating equation (3) with 2SLS.[7] In column 1 we control for individual and peer characteristics. The peer fertility rate has a positive and strongly significant effect on an individual's probability of having a child. The estimated coefficient indicates that a 1-percentage-point reduction in the average peer fertility caused by the increased fraction of less protected co-workers hired after the Jobs Act leads to a reduction of 0.45 percentage points in the individual probability of having a child. As for the control variables, our results are in keeping with previous studies: age and fertility show a concave relationship, immigrants have a higher probability of having a child, and workers with more years of labor market experience and on part-time jobs have a lower probability.

In columns 2, 3 and 4 we progressively extend the set of covariates to include year, region, and industry dummies. Year dummies control for common shocks, and region and industry dummies account for potential unobserved heterogeneities. Reassuringly, our key estimate remains not only strongly significant but also stable in magnitude, around 0.40 percentage points. The results from our preferred specification in column 4 indicate a drop in fertility of about 10% following a 1-p.-p. reduction in co-workers' fertility induced by the Jobs Act.

[7] The OLS estimates of equation 1 are reported in Table A.3 in the Appendix.

Table 2. Individual Fertility and Fertility of Peers. 2SLS Estimates

	(1)	(2)	(3)	(4)
Second-Stage regressions				
Peer Fertility Rate	0.4538***	0.4044***	0.4088***	0.4023***
	(0.0299)	(0.0276)	(0.0273)	(0.0276)
Female	-0.0049***	-0.0052***	-0.0050***	-0.0049***
	(0.0003)	(0.0002)	(0.0002)	(0.0002)
Age	0.0041***	0.0042***	0.0041***	0.0041***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Age Squared	-0.0001***	-0.0001***	-0.0001***	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Immigrant	0.0081***	0.0081***	0.0086***	0.0088***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Tenure	-0.0003***	-0.0002***	-0.0002***	-0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Experience	-0.0004***	-0.0004***	-0.0004***	-0.0004***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Part-Time	-0.0082***	-0.0083***	-0.0084***	-0.0083***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Blue-Collar	-0.0021***	-0.0022***	-0.0028***	-0.0023***
	(0.0002)	(0.0003)	(0.0003)	(0.0003)
White-Collar	0.0010***	0.0012***	0.0009**	0.0012***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Peer Fraction of Female	0.0039***	0.0044***	0.0049***	0.0056***
	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Peer Fraction of Immigrants	-0.0064***	-0.0063***	-0.0050***	-0.0043***
	(0.0004)	(0.0004)	(0.0004)	(0.0005)
Peer Tenure	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Peer Experience	-0.0005***	-0.0005***	-0.0005***	-0.0005***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Peer Fraction of Part-Time	0.0023***	0.0019***	0.0011*	0.0012*
	(0.0005)	(0.0005)	(0.0005)	(0.0005)
First-Stage regressions				
Fraction Jobs Act Peers	-0.0142***	-0.0189***	-0.0191***	-0.0188***
	(0.0004)	(0.0006)	(0.0005)	(0.0005)
Weak identification test				
Kleibergen-Paap rk Wald F-statistic	1182.13	1139.43	1218.67	1195.91
Weak-instrument-robust inference				
Anderson-Rubin Wald test p-value	0.0000	0.0000	0.0000	0.0000
Year dummies	NO	YES	YES	YES
Region dummies	NO	NO	YES	YES
Sector dummies (90)	NO	NO	NO	YES
Mean of dependent variable	0.037	0.037	0.037	0.037
Median peer group size	23	23	23	23
Observations	11,008,833	11,008,833	11,008,833	11,008,833

Notes: Each column reports first- and second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

4.1. Robustness Checks

In Table 3 we verify the robustness of our main results to changes in firm size categories. We replicate our main specification (Table 2, column 4), controlling for individual and peer characteristics, year, region, and sector dummies. The estimates in columns 1-2 show that our main results are robust to alternative thresholds

to define large firms, namely 20 or 50 employees. In columns 3-5 (which exclude firms with more than one establishment, where large firm size could mask several smaller establishments), we also find that the magnitude of the effect increases with the shift from relatively larger to relatively smaller firms, consistently with the thesis that social interactions might be more salient in smaller firms.

Table 3. Robustness Checks: Alternative Firm Size Categories

	(1) Firm size >=20	(2) Firm size >=50	(3) Firm size <=250	(4) Firm size <=150	(5) Firm size <=50
Second-stage regressions					
Peer Fertility Rate	0.4118***	0.4233***	0.3994***	0.4077***	0.4309***
	(0.0287)	(0.0331)	(0.0334)	(0.0363)	(0.0407)
First-stage regressions					
Fraction Jobs Act Peers	-0.0191***	-0.0207***	-0.0179***	-0.0176***	-0.0171***
	(0.0006)	(0.0008)	(0.0005)	(0.0005)	(0.0006)
Weak identification test					
Kleibergen-Paap rk Wald F-stat	1073.64	719.74	1293.57	1141.15	704.85
Weak-instrument-robust inference					
Anderson-Rubin Wald test p-val	0.0000	0.0000	0.0000	0.0000	0.0000
Mean of dependent variable	0.0369	0.0371	0.0368	0.0366	0.0364
Median peer group size	26	42	11	9	6
Observations	10,424,671	8,296,683	5,565,783	4,668,235	2,514,017

Notes: Each column reports first- and second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. In columns 3-5 we consider only firms with one establishment. Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

Next we evaluate the robustness of our results in a model with firm fixed effects and with different definitions of peer group. We report these robustness checks in Table A.4 in the Appendix. First, column 1 augments our main specification with the inclusion of firm fixed effects so as to account for unobserved firm-level heterogeneity. Reassuringly, the main estimate remains strongly significant and positive, if somewhat smaller in magnitude. Second, in columns 2-3 we probe the robustness of our main results to the way we define the peer group. In our primary analysis, the peer group comprises employees in the same workplace, age group, and occupation. Here we introduce two alternative definitions: one includes employees from the same workplace and age group, regardless of occupation, and the second encompasses co-workers in the same workplace, the same age group, occupation, and also gender. The estimates reported in columns 2-3 of Appendix Table A.4 demonstrate the robustness of our main findings to these alternative definitions: the coefficient on the *Peer Fertility Rate* is very similar to that obtained in column 4 of Table 2.

4.2. Placebo Test

One concern with our estimation strategy is that our instrument might be capturing unobservable firm characteristics that affect the fertility rates of newly hired and incumbent workers alike. To investigate this, we focus on firms with multiple workplaces (about 1 million workers in our sample are employed in such

firms) and conduct a placebo test using workers in other plants of the same firm to construct an artificial, false peer fertility rate. The idea is that workers' fertility decisions should not respond to changes in the fertility rate of peers with whom they do not actually interact, i.e. those in other workplaces.

In Table 4 we check whether the impact of peer fertility on individual fertility is driven by the average fertility rate in other workplaces of the same firm. Importantly, the coefficient of the average fertility rate of workers in other plants of the same firm is much smaller and indeed has no significant effect on the individual probability of having a child. This reassures us that our main effect does not represent a spurious correlation.

Table 4. Placebo Test: Using Peer Fertility Rate in Other Plants of the Same Firm

	(1)	(2)	(3)	(4)
Second-stage regressions				
Placebo Peer Fertility Rate	0.0839*	0.0614	0.0632	0.0499
	(0.0427)	(0.0409)	(0.0421)	(0.0428)
First-stage regressions				
Placebo Fraction Jobs Act Peers	-0.0110***	-0.0121***	-0.0119***	-0.0104***
	(0.00209)	(0.0021)	(0.0021)	(0.0019)
Weak identification test				
Kleibergen-Paap rk Wald F-statistic	27.94	25.71	31.73	30.79
Weak-instrument-robust inference				
Anderson-Rubin Wald test p-value	0.0000	0.0000	0.0000	0.0000
Year Dummies	NO	YES	YES	YES
Region Dummies	NO	NO	YES	YES
Sector Dummies (90)	NO	NO	NO	YES
Observations	2,329,698	2,329,698	2,329,698	2,329,698

Notes: Each column reports first- and second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same occupation and age group but in a different workplace of the same firm. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers in the same occupation and age group but in a different workplace of the same firm that have been hired under the Jobs Act regime. Each specification includes individual controls, peer group as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

5. Heterogeneous Responses

This section elaborates on the mechanisms through which peer fertility may shape individual fertility decisions, investigating how the estimated peer effects vary with individual and peer group characteristics. As noted above, peer influence in the workplace may operate through three main channels: social influence, information sharing or social learning, and career concerns.

We begin by analyzing heterogeneity by gender (Table 5), finding that the fertility response differs in magnitude between female and male workers. The estimates in columns 1 and 2 suggest that a 1-percentage-point reduction in peer fertility is associated with a decrease in own probability of having a child of 7% for female workers and 15% for male workers.

This gender difference probably reflects the fact that the problem of balancing work and family life is especially severe acute for women, who typically bear the greater part of the difficulties associated with childcare and domestic responsibilities. These results would suggest that while social influence plays a role

for both genders (the estimated peer effect is positive for both women and men), career concerns and social learning may attenuate the positive effect estimated in our main specification in Table 2.

Table 5. Heterogeneous Responses: by Gender

	(1) Female	(2) Male
Peer Fertility Rate	0.3235***	0.4882***
	(0.0372)	(0.0398)
Observations	3,583,868	7,424,965
Mean of dependent variable	0.044	0.033
SD of dependent variable	0.205	0.180

Notes: Each column reports second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

Previous empirical evidence shows that this social learning channel is more likely to operate before individuals become parents than once they already have children (Lyngstad and Prskawetz, 2010). The results in Table 6 are consistent with this hypothesis, as they show a significantly smaller peer effect for workers at first childbirth than for those who already had children. While this is true for both female and male workers, the gender differences in the coefficients suggest that social learning is a more salient mechanism for women.

Table 6. Heterogeneous Responses: by Gender and Birth Order

	(1)	(2)	(3)	(4)
	Female		Male	
	N. pre-existing children=0	N. pre-existing children>=1	N. pre-existing children=0	N. pre-existing children>=1
Peer Fertility Rate	0.4071***	0.9753***	0.3029***	0.5968***
	(0.0399)	(0.1128)	(0.0706)	(0.0568)
Observations	3,126,891	456,977	5,250,641	2,174,324
Mean of dependent variable	0.028	0.150	0.023	0.060
SD of dependent variable	0.166	0.356	0.149	0.237

Notes: Each column reports second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

To elaborate further on the relative importance of career concerns and social influence, we explore the heterogeneity by years of tenure, separately for men and women. This may capture the relative importance of job stability in explaining family planning decisions. The estimates in Table 7 show a substantially larger peer effect for individuals with greater tenure (i.e. those with above-median gender-specific years), in line with the hypothesis that high-tenure workers may feel less in competition with their peers and therefore react more strongly to the latter's fertility. Consistently, we find that the disparity is more pronounced among women.

Table 7. Heterogeneous Responses: by Gender and Tenure

	(1)	(2)	(3)	(4)
	Female		Male	
	Tenure <=median	Tenure >median	Tenure <=median	Tenure >median
Peer Fertility Rate	0.3229***	0.5952***	0.4757***	0.5848***
	(0.0406)	(0.0657)	(0.0465)	(0.0603)
Observations	2,193,761	1,390,107	4,152,264	3,272,701
Mean of dependent variable	0.053	0.029	0.039	0.026
SD of dependent variable	0.224	0.163	0.194	0.160

Notes: Each column reports second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

In Table A.5 in the Appendix we estimate the effect for workers in different quartiles of the wage distribution. Interestingly, for men the peer effect increases progressively with the wage level, from 12% in the bottom to about 18% in the top quartile. For women, the findings are similar, but with smaller inter-quartile differences (from 6.9% for workers in the bottom to 8% for those in the top quartile) and with a less straightforward pattern (inverse U-shaped).

Next we investigate the role played by social norms in explaining our estimated peer effect, examining whether the impact varies according to the gender norms that prevail in the worker's region; that is, whether the impact is different in regions with more or less traditional gender norms (corresponding to less or more egalitarian societies). On the one hand, in societies that adhere to traditional gender roles, where women are mainly expected to fulfill the role of mothers, observing peers who have children may create social pressure, while the effect on men may be less significant. On the other hand, in areas with traditional gender norms, women might be more reluctant to have a child since they are more likely to bear most of the problems connected with childbirth, so their reaction to peer fertility could be weaker. Using data from the fourth wave of the European Values Study, we allocate the regions of Italy to two groups, depending on whether the percentage of individuals who agree with the statement "A man's job is to earn money; a woman's job is to look after home and family" is above or below the median. The former group is considered to have more traditional gender roles. We therefore run separate regressions by group and gender.

The estimates in Table 8 indicate a considerably greater effect for female workers who live in the areas with more traditional gender roles (the coefficient is 0.425) than in the others (0.176). We find the opposite pattern for men, though with a much smaller difference in magnitude across areas with different gender norms. Taken together, the estimates in Table 8 are consistent with the hypothesis that in less egalitarian societies a woman's decision to have a child may be more responsive to the fertility of her peers, as she might perceive stronger social pressure for maternity. Overall, these findings are in keeping with the evidence in Fletcher and Yakusheva (2016), which indicate social norms as a key mechanism behind peer fertility effects.

Table 8. Heterogeneous responses: by gender and type of gender norms

	(1)	(2)	(3)	(4)
	Female		Male	
	More traditional gender norms	Less traditional gender norms	More traditional gender norms	Less traditional gender norms
Peer Fertility	0.4252***	0.1767**	0.4581***	0.5259***
	(0.0486)	(0.0561)	(0.0511)	(0.0624)
Observations	2,052,044	1,531,824	4,263,435	3,161,530

Notes: Each column reports second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Regions with more traditional gender norms are those with above-median answers to the question "A man's job is to earn money; a woman's job is to look after home and family" (from the fourth European Value Survey). Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archive, *Assegno Unico e Universale* records, and European Value Surveys.

We further corroborate the evidence on the importance of social norms by examining whether the impact differs between native and immigrant workers. These results are reported in Table A.6 in the Appendix. Immigrants often come from countries with more traditional gender norms than those that prevail in Italian society. According to the data provided by the Italian National Statistics Institute (Istat), the largest foreign community is from Romania, accounting for 21.5% of all foreigners residing in the country, followed by Morocco (8.4%) and Albania (8.3%). The estimates in columns 1-2 of Table A.6 reveal that while the effect is statistically significant for both native and immigrant workers, it is significantly larger for the latter (12% compared to 9%). Columns 3-4 of Table A.6, then, focusing on the subgroup of immigrant workers, show that peer effects are significant for them only when the fraction of immigrants in their worker peer group is relatively high. This may be attributed to a heightened social pressure stemming from co-workers with whom they identify most closely.

In Table 9, we also investigate whether the magnitude of the effect varies with the proportion of female co-workers in the peer group. An increase in the number of women peers can produce distinct effects on women and men. Women who share the workplace with a larger percentage of female colleagues may identify more with their peer group and therefore respond more strongly to changes in peer fertility via social influence. Conversely, the opposite is expected for men. However, having more female co-workers may increase the chances, especially for women, to gain knowledge about the drawbacks of parenthood.

As explained above, women tend to have more problems in reconciling work and family responsibilities and to experience more severe drawbacks than men from having children, leading to concerns that may discourage them from parenthood. This consideration is likely to affect women, less likely to influence men, who realize that these difficulties typically do not extend to male workers. Therefore, for women, an increase in the proportion of female peers triggers conflicting mechanisms, attenuating the overall peer effect. On the other hand, for men, a higher share of same-sex co-workers should be associated with a stronger response, as only the social influence mechanism should be at play.

Table 9. Heterogeneous responses: by fraction of female peers

	(1)	(2)	(3)	(4)
	Female		Male	
	% Female peers <= median	% Female peers > median	% Female peers <= median	% Female peers > median
Peer Fertility Rate	0.5651***	0.3130***	0.5902***	0.3640***
	(0.1674)	(0.0382)	(0.0716)	(0.0452)
Observations	581,141	3,002,727	4,923,608	2,501,357
Mean of dependent variable	0.027	0.047	0.029	0.042
SD of dependent variable	0.163	0.212	0.168	0.201

Notes: Each column reports second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

The results in Table 9 basically confirm these hypotheses. As the share of female workers increases, women exhibit a less pronounced reaction (columns 1-2), which suggests that the information-sharing channel attenuates the heightened sense of identification with the peer group. For male workers instead, who may not identify with female peers, the response to changes in peer fertility is less pronounced when their co-workers are mainly women (columns 3-4).

Finally, in Table 10 we examine how male and female workers react separately to the fertility of female co-workers (columns 1-2) and male co-workers (columns 3-4). We find that both men and women respond more strongly to changes in male than female peer fertility. Again, this gibes with the hypothesis that when female peers have children, the problems associated with parenthood are more salient, leading to a more contained peer effect, while when male peers have children, the costs of childbearing are less readily visible, which may lead to a stronger response for both men and women.

Table 10. Reactions of Men and Women to Peers of the Same and of the Opposite Gender

	(1)	(2)	(3)	(4)
	Male	Female	Male	Female
Peer Fertility Rate (Females)	0.2986***	0.2596***		
	(0.0328)	(0.0275)		
Peer Fertility Rate (Males)			0.5479***	0.4088***
			(0.0542)	(0.1048)
Observations	3,922,425	3,332,142	7,260,772	2,890,585
Mean of dependent variable	0.033	0.044	0.033	0.041

Notes: Each column reports second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

6. Conclusions

The declining fertility of the advanced countries is a central issue in the agenda of policymakers, given its enormous consequences for the sustainability of the social security system, the financing of the health system, the labor market and so on. Understanding the determinants of fertility is key to promoting policies to tackle these problems.

The aim of our paper is to gauge the effect of co-workers' fertility on individual decisions to have children. In particular, we estimate how the average fertility rate among workplace peers affects a worker's likelihood of having a child. Using large-scale matched employer-employee data from the Italian Social Security Institute (INPS) during the period 2016-2020, we provide evidence that co-workers significantly shape individual fertility behavior, a matter that has been relatively little explored in the general literature on peer effects.

To overcome endogeneity issues, we adopt an instrumental variable identification strategy and exploit the variation in workplace fertility induced by the 2015 Jobs Act, which reduced employment protection – and consequently fertility – for workers hired on open-ended contracts by large firms (more than 15 employees) after 7 March 2015. Our analysis focuses on male and female workers on permanent contracts in such firms hired before the reform, using the fraction of co-workers hired after it as an instrumental variable for the fertility rate of the peer group, on the assumption that the variation in the fraction of peers hired after the Jobs Act is not directly related to the individual decision to have a child.

Consistent with the findings of De Paola, Nisticò and Scoppa (2021), our first stage estimates indicate that the average fertility decreases significantly in firms with more employees hired after the Jobs Act. Our main results from the second-stage estimates show that workers' probability of having a child decrease if their co-workers have recently had fewer children. We document that a 1-percentage-point reduction in the peer fertility rate induced by the increased fraction of co-workers hired after the Jobs Act – hence with weakened employment protection – leads to a reduction of about 0.40 points in the individual probability of having a child. This corresponds to a reduction of about 10% of the average fertility of 3.7%.

Our heterogeneity analysis yields valuable insights into the intricate mechanisms that underpin fertility decisions. Notably, female workers tend to be influenced less than men by their colleagues' decisions to have children, and more so for women at first childbirth. This gender divergence likely stems from the diverse challenges faced by women and men in balancing work and family life. We also find that people with less job experience or in more insecure positions are less affected by their colleagues' fertility decisions, suggesting that the fear of potential career setbacks, especially during the early stages, might exert considerable pressure, leading to a more cautious family planning approach.

Our analysis also reveals interesting dynamics concerning the composition of peer groups. When there is a higher proportion of female colleagues, women's responses are nuanced. While they might identify more strongly with their female co-workers, fostering greater social influence, they also become more aware of the difficulties associated with motherhood. This awareness tempers their own fertility decisions, resulting in conflicted responses. Conversely, for male workers with a majority of same-sex peers, the driving forces

arising from social influence and knowledge-sharing appear to be less conflicting, leading to more accentuated responses.

Finally, our study underscores the role of social norms in mediating the effect of peer fertility. The impact is significantly more pronounced for female workers who live in regions characterized by more widespread adherence to traditional gender roles, compared with their counterparts in more progressive regions. In those areas, women face heightened social pressure to conform to family norms. This pattern is also evident among immigrants from countries with deeply entrenched traditional gender norms. Their responses to changes in peer fertility are notably heightened, underscoring the profound influence of cultural factors on fertility decisions.

Overall, these findings help illuminate the intricate interplay of work concerns, societal expectations and information sharing in shaping peer dynamics. Understanding these dynamics is crucial, not only to grasp the complexities of peer effects but also to foresee the consequences of policy interventions or shifts in the socio-economic landscape that could directly or indirectly affect fertility rates. The decision to have children is not made in isolation but is profoundly influenced by the choices and circumstances of one's peers. Consequently, policy interventions or changes in the socio-economic environment can have amplified effects on fertility rates if these social interactions are taken properly into account.

Specifically, our research underscores how labor market reforms designed to enhance flexibility, while offering benefits in certain domains, might unintentionally lower fertility rates. Such a reduction is not a result of the policy alone but is significantly reinforced through social interactions. When workers make choices about their families, these decisions can influence their workplace colleagues. This amplification of policy impacts through social networks emphasizes the need for a holistic approach to policymaking, one that considers not only the immediate effects but also the social dynamics that underpin human decision-making.

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APPENDIX

Table A.1. Descriptive Statistics

Variable	Mean	S.D.	Min	Max
Child	0.037	0.189	0	1
Fraction Jobs Act Peers	0.167	0.208	0	1
Peer Fertility Rate	0.035	0.070	0	1
Female	0.325	0.469	0	1
Age	40.964	7.004	16	56
Immigrant	0.107	0.310	0	1
Tenure	7.574	2.918	1	12
Experience	19.145	7.327	0	32
Part-Time	0.152	0.359	0	1
Blue-Collar	0.472	0.499	0	1
White-Collar	0.447	0.497	0	1
Manager	0.064	0.245	0	1
North	0.635	0.481	0	1
Centre	0.194	0.396	0	1
South	0.170	0.376	0	1

Notes: Sample: 11,008,833 observations. The sample includes female employees aged 16-46 and male employees aged 16-56, with permanent contracts in private-sector firms.
Sources: INPS Archives and *Assegno Unico e Universale* records.

Table A.2. Reduced-Form Estimates

	(1)	(2)	(3)	(4)
Fraction Jobs Act Peers	-0.0064***	-0.0077***	-0.0078***	-0.0076***
	(0.0005)	(0.0006)	(0.0006)	(0.0006)
Controls				
Individual Controls	YES	YES	YES	YES
Peer Group Controls	YES	YES	YES	YES
Year Dummies	NO	YES	YES	YES
Region Dummies	NO	NO	YES	YES
Sector Dummies (90)	NO	NO	NO	YES
Observations	11,008,833	11,008,833	11,008,833	11,008,833

Notes: Each column reports estimates from the OLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Individual controls: Female, Age, Age Squared, Immigrant, Tenure, Experience, Part time. Peer group controls: % Females, % Immigrants, Avg. Tenure, Avg. Experience, % Part time. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives.

Table A.3. OLS Estimates

	(1)	(2)	(3)	(4)
Peer Fertility Rate	0.0461***	0.0460***	0.0448***	0.0434***
	(0.0014)	(0.0014)	(0.0014)	(0.0013)
Controls				
Individual Controls	YES	YES	YES	YES
Peer Group Controls	YES	YES	YES	YES
Year Dummies	NO	YES	YES	YES
Region Dummies	NO	NO	YES	YES
Sector Dummies (90)	NO	NO	NO	YES
Observations	11,008,833	11,008,833	11,008,833	11,008,833

Notes: Each column reports estimates from the OLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. Individual controls: Female, Age, Age Squared, Immigrant, Tenure, Experience, Part time. Peer group controls: % Females, % Immigrants, Avg. Tenure, Avg. Experience, % Part time. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives.

Table A.4. Robustness Checks: Firm Fixed Effects and Alternative Peer Group Definitions

	(1)	(2)	(3)
Second-stage regressions			
Peer Fertility Rate	0.3562***		
	(0.0373)		
Peer Fertility Rate (same age group)		0.4612***	
		(0.0256)	
Peer Fertility Rate (same age group, occupation, and gender)			0.3699***
			(0.0288)
First-stage regressions			
Fraction Jobs Act Peers	-0.0174***	-0.0218***	-0.0177***
	(0.0006)	(0.0006)	(0.0005)
Firm dummies	YES	NO	NO
Mean of dependent variable	0.037	0.037	0.036
Median peer group size	23	67	18
Observations	11,008,833	11,008,833	10,509,108

Notes: Each column reports first- and second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group in column 1 (our main definition), in the same workplace and age group in column 2, and in the same workplace, age group, occupation, and gender in column 3. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

Table A.5. Heterogeneous responses: by Gender and Wage Quartile

	(1)	(2)	(3)	(4)
		Female		
	Wage Q1	Wage Q2	Wage Q3	Wage Q4
Peer Fertility Rate	0.3268***	0.4396***	0.3998***	0.3540***
	(0.0555)	(0.0795)	(0.0934)	(0.0742)
Observations	888,681	888,699	888,662	888,680
Mean of dependent variable	0.048	0.044	0.042	0.042
SD of dependent variable	0.214	0.206	0.200	0.200
		Male		
Peer Fertility Rate	0.4535***	0.4869***	0.5695***	0.5278***
	(0.0569)	(0.0743)	(0.0797)	(0.1299)
Observations	1,846,635	1,846,700	1,846,591	1,846,610
Mean of dependent variable	0.036	0.035	0.034	0.029
SD of dependent variable	0.187	0.184	0.182	0.166

Notes: Each column reports second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.

Table A.6. Heterogeneous responses: by immigrant status and fraction of immigrant peers

	(1)	(2)	(3)	(4)
	Native	Immigrant	Immigrant	
			% Immigrant peers <= median	% Immigrant peers > median
Peer Fertility Rate	0.3490***	0.5230***	0.2844	0.5782***
	(0.0309)	(0.0628)	(0.2017)	(0.0681)
Observations	9,825,607	1,183,226	171,529	101,1697
Mean of dependent variable	0.036	0.043	0.044	0.043
SD of dependent variable	0.187	0.203	0.205	0.202

Notes: Each column reports second-stage estimates from the 2SLS regression. The dependent variable, *Child*, is a dummy that takes the value 1 for individuals who conceived a child. The treatment variable, *Peer Fertility Rate*, measures the average fertility rate among co-workers in the same workplace, occupation, and age group. The instrumental variable, *Fraction Jobs Act Peers*, measures the fraction of co-workers hired under the Jobs Act regime. Each specification includes individual controls, peer group controls and year, region, and sector dummies as in Table 2, column 4. Standard errors in parentheses are clustered by firm. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Sources: INPS Archives and *Assegno Unico e Universale* records.