

# School of Economics and Finance

## Roadblocks on the Road to Grandma's House: Fertility Consequences of Delayed Retirement

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Working Paper No. 748

June 2015

ISSN 1473-0278



Queen Mary  
University of London

# Roadblocks on the Road to Grandma's House: Fertility Consequences of Delayed Retirement\*

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June 2, 2015

## Abstract

We investigate the role of grandparental childcare for fertility decisions of their offspring. Exploiting pension reforms in Italy, we argue that delayed retirement represents a negative shock to the supply of informal childcare for the next generation. We show that, when the maternal grandmother is not available, motherhood after age 30 is less likely. This effect persists as the woman ages, and parallels that on number of children. We argue that these are permanent changes to completed fertility for many cohorts in our data. Consistent with our interpretation, we show that results are limited to the most familistic close-knits where the role of grandparents is more important, and that are not the mechanical consequence of changes of living arrangements and labor supply. Given the Italian lowest low fertility, we conclude that pension reforms may have had unintended inter-generational effects.

*Keywords:* Fertility; Informal Child Care; Pension Reforms.

*JEL Classification:* J08, J13, H42.

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\*The manuscript benefited from comments by audiences at GSP (Brixen, Italy - February 2013), DON-DENA Center for Research on Social Dynamics (Milan, April 2013), IRVAPP (Trento, May 2013), 27th Conference of the European Society for Population Economics (Aarhus, June 2013), 15th IZA/CEPR European Summer Symposium in Labour Economics (Buch, Ammersee, September 2013), 25th European Association of Labour Economist Annual Conference (Turin, September 2013), City University (London, March 2015), 4th SOLE/EALE World Meetings (Montreal, June 2015) as well as from discussions with Josh Angrist, Maria Castiglioni, Matteo Cervellati, Gianpiero Dalla Zuanna, Margherita Fort, Nicola Fuchs-Schündeln, Vincenzo Galasso, Omar Paccagnella, Enrico Rettore, Maria Rita Testa, Serena Trucchi and Matthew Wakefield. Part of the project was developed while Erich Battistin was visiting the MIT Department of Economics. The financial support from the Italian Ministry of University and Research (Futuro in Ricerca 2008 - "The economic effects of demographic ageing") is gratefully acknowledged. Email addresses for correspondence: e.battistin@qmul.ac.uk, michele.denadai@unipd.it, padulm@usi.ch.

# 1 Introduction

The demographic transition has caused profound revisions of social security systems in several developed countries. In many cases these reforms have meant a shift from a defined benefit to a defined contribution system, together with a gradual change of the minimum retirement age aimed at increasing labor market participation at the end of the life-cycle (Milligan and Wise 2012). On the one hand, by acting on eligibility rules and the return on mandatory saving to retirement, pension reforms affect consumption, saving and labor supply decisions of the targeted individuals.<sup>1</sup> On the other hand, to the extent that individuals are altruistically linked, the effect of reforms for one generation may spill over generations that are not directly affected. We argue that pension reforms, by lengthening the working horizon of individuals, induce a negative shock to the supply of informal childcare potentially available to the next generation. We therefore investigate the inter-generational effects of these reforms on the fertility decisions of the offspring generation.<sup>2</sup>

We take Italy as case study and consider a number of reforms of the social security system that took place during the 1990s and mandated individuals to a substantially longer working horizon. We link information for the generation affected by these reforms to life history data for the offspring generation. We use data from the *Family and Social Subjects* survey, which is part of an integrated system of social surveys carried out by the Italian National Statistical Office on daily lives of individuals and families. This allows us to study differences in fertility and labor supply decisions across couples indexed by their parents' status with respect to reforms in the 1990s.

A common issue in this literature, to which our identification strategy offers a new solution, is the endogeneity of childcare utilization with respect to both fertility and labor supply of mothers. A wide range of government interventions may in principle affect the demand for childcare, be it formal or informal. However, for policies that impact on maternal work (e.g. minimum wage, changes to tax credits and benefits, maternity leave and pay flexible

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<sup>1</sup>Recent work has considered the effects on consumption (Battistin et al. 2009), saving (Attanasio and Brugiavini 2003), wealth (Bottazzi et al. 2006), portfolio choice (Bottazzi et al. 2011) and labor supply (Liebman et al. 2009).

<sup>2</sup>While the literature on the intra-generational effect of reforms on saving and labor supply is quite extensive, to the best of our knowledge only one paper, Billari and Galasso (2010), looks at the effect on intra-generational fertility and exploit pension reforms as a source of exogenous variation to test two alternative theories: children as 'consumption' versus 'investment' good.

working rights) the validity of the exclusion restriction is not uncontroversial. Also, policies altering the nature of childcare choices or costs usually target ‘formal’ channels (e.g. tax-free childcare vouchers, or extended instruction time at school; see Schlosser 2011 and Mörk et al. 2013 for examples). We mark something of a departure, and instead consider exogenous shocks to the supply of ‘informal’ childcare across generations. We focus on cohorts of parents whose fertility and education decisions were already taken at the time of reforms. Our identifying assumption is that fertility of the offspring generation is altered by changes to the social security system only through their effect on parents’ labor supply.

The relevance of our research question is grounded on the role of time devoted by grandparents to the care of grandchildren. Despite various examples of government investment to boost formal childcare policies, the number of households using informal childcare provided by grandparents remains high in many countries. Cardia and Ng (2003) report that in the US Health and Retirement Survey grandparents devote 8 hours per week to the care of their grandchildren. García-Morán and Kuehn (2014) use the Survey of Ageing and Retirement in Europe to show that between 23 to 70 percent of grandparents take care of their grandchildren on a daily or a weekly basis. Bryson et al. (2011) report that about 16 percent of UK households have a child’s grandparent offering childcare while parents work; they estimate that these are twice as many households as those using formal alternatives such as nurseries or school clubs. While the incidence of care provided by grandparents varies significantly across European countries, the time transfers across generations are important in all countries compared to other in-kind or money transfers (see Albertini et al. 2007).<sup>3</sup>

Italy is no exception to this pattern, but presents peculiarities that are important for our research question. There are 11 million grandparents in the country, representing about one third of the population aged above 35. This percentage is higher for Central and Southern regions, where it picks at above 40 percent and is mirrored by lower kindergarten coverage. According to our data, grandparents hang around regularly with grandchildren: 42 percent of them daily, and 39 percent at least once a week. Most importantly for the purpose

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<sup>3</sup>In light of these numbers, informal childcare and the support to informal carers - mainly represented by grandparents - is now high on the policy agenda of many European countries. For example, in 2010 the UK Department for Work and Pensions announced a consultation for allowing parents to transfer national insurance credits to the grandparents providing childcare. In Germany, the Federal Minister of Families Kristina Schröder has recently made a law proposal to grant grandparents the right to unpaid leave (up to 3 years) in order to take care of their grandchildren.

of this paper, official figures from the National Statistical Office report that 86 percent of grandparents actively contribute to childcare, grandmothers being the most involved.<sup>4</sup> The above figures suggest that the role played by informal institutions in Italy marks a significant departure from other European countries. Besides, Italy presents substantial variability in familistic culture across regions (Banfield 1958).

We exploit this institutional setting and employ within country variability to investigate how changes to the working horizon of one generation affect the organisation of the close-knit and the behaviour of its members, and how cultural factors interact with the shock. This is a potentially important channel, as we know that social norms predict a somewhat stereotyped behavior in an individual's life cycle. Living arrangements in a familistic society are different, and the practice to leave the parental home only for marriage is widespread.<sup>5</sup> This may affect fertility, as well as labor supply decisions: a familistic culture supports a more traditional role for the woman, and a pronounced division of labor between male and female members of the family (Giuliano 2007 and Alesina and Giuliano 2010). Arguably the existence of strong family ties is associated with more reliance on extended family members for the provision of goods and services, like childcare (El-Attar 2013). In this setting, geographic proximity represents an important form of insurance, and reinforces cooperation bonds amongst family members. According to our data, 72 percent of couples have at least one parent living in the same municipality and 77 percent of couples meet regularly at least one of their parents on a weekly basis. As we shall show below, these numbers are higher in the most conservative regions of the South. One may think that parental proximity is peculiar to the anthropological family structure of the Italian society, but in fact this is not the case. For example, Compton and Pollak (2015) find that, in the US, the median distance from mothers is 20 and 25 miles for adult males and adult females, respectively, and conclude that the pattern of inter-generational proximity is gendered.

On the other hand, independently of culture, it is well known that child raising costs

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<sup>4</sup>The time granted by grandparents is not only related to occasional commitments of parents (25 percent), but also to their working hours (24 percent). Babysitting (12 percent), sickness of grandchildren (9 percent) and holidays (9 percent) are additional occasions of childcare provision.

<sup>5</sup>Accordingly, some 40 percent of individuals aged between 25 and 34 in Italy live with their parents. Becker et al. (2010) relate it to the lower job insecurity of parents compared to children. Manacorda and Moretti (2006) argue that it is due to the parents' taste for cohabitation. Giuliano (2007) relates the high rate of co-residence in Southern European countries to the sexual revolution of the 1970s that liberalized parental attitudes towards pre-marital sex, and emphasizes the role of cultural attitudes in determining living arrangements.

might have a sizeable impact on fertility and employment decisions of mothers. Blau and Robins (1989) use a sample of labor-market and life-histories and show that higher childcare costs reduce the birth rate for non-employed women, increase the probability of leaving employment, and reduce that of entering the labor-force. Del Boca and Vuri (2007) study how institutions providing childcare in Italy affect labor market decisions of mothers. Dimova and Wolff (2011) focus on Europe and find a strong positive effect of grandchildcare on the degree of labor market involvement of the young mother.<sup>6</sup> Bick (2015) provides a life-cycle model incorporating both paid and un-paid care to children, showing that the lack of subsidized childcare is an obstacle to female labor market participation and depresses fertility. Compton and Pollak (2014) find that geographical proximity of grandparents in the US, and of mothers and mothers in law in particular, affects positively the labor supply of women with children 12 and under. They argue that the likely mechanism is childcare.

Our approach is complementary to studies investigating the effect of economic incentives on fertility. Those studies provide mixed results (for a survey on the US, see Blau 2003). Milligan (2005), Laroque and Salanié (2014) and Cohen et al. (2013) document large effects of tax incentives on fertility in Canada, France and Israel, respectively, while Baughman and Dickert-Conlin (2003) find small effects of Earned Income Tax Credit on fertility in the US.<sup>7</sup> The lack of consistent findings may follow from the use of different identification strategies. Households may rely on a large array of unpaid childcare arrangements, posing measurement problems for the effect of changes in the cost of the marginal child due to tax incentives and subsidies. Furthermore, the heterogeneity of preferences towards paid and unpaid childcare challenges identification. We exploit a policy change that leaves tax incentives and subsidies unaffected, but affects the provision of unpaid childcare from grandparents.

The presentation of our findings is structured as follows. First, we show that the pension reforms implemented in Italy during the 1990s affected markedly the working horizon of individuals. As we will discuss further below, the cohorts affected comprise only individuals whose educational and fertility choices were already taken at the time of reforms. This is an important point that we use to rule out the existence of multiple inter-generational channels.

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<sup>6</sup>García-Morán and Kuehn (2014) also provide a quantitative model to investigate the effects of grandparent-provided care on fertility and labor supply decisions.

<sup>7</sup>A related literature investigates the effects of pro-natalist labor market policies on fertility and female labor force participation. The evidence is mixed (see Kalwij 2010 and references therein).

We document negative effects of the reforms on retirement probabilities of about 5 percent at age 50, which up to 1992 was the minimum retirement age set by law. We show that the reforms lengthened the working horizon by about 5 years.

Second, we estimate reduced form regressions for fertility distinguishing between households whose families of origin were differentially affected by the reforms. The thought experiment sets up the comparison of same-age females with observationally identical parents and parents in law mandated to increasingly longer working horizons because of the reforms. We show that the number of parents eligible for pension benefits, which we use to proxy potential availability for informal childcare, has an important effect on fertility decisions. One less grandparent available at age 30 decreases the likelihood of being mother by 2.5 percent, and by 3.4 percent at age 39. We find that these effects depend on the extent of family ties, for which we have detailed information in the data, and disappear without a family-intensive organization technology. Other than considering motherhood, we document the same pattern on number of children at different ages. We also document gender differences in the role of grandparents: the effects of grandparental availability are almost entirely driven by availability of the maternal grandmother. We show, in addition, that cultural preferences for grandparents-provided childcare act over and above the taste for cohabitation of members of the family of origin, an interpretation offered by Manacorda and Moretti (2006).

Third, we investigate whether the effects documented unveil a delay or, rather, a permanent change in fertility decisions. The timing of pension reforms does not allow us to observe the whole reproductive histories for women before and after the regulatory changes in the 1990s. We show, however, that our identification strategy allows estimation of ‘delayed’ effects to understand if the lack of grandparental availability at a certain age has persistent effects over the following 5 years. This is the latest time horizon we are able to consider given the time structure of the available survey data. We find that one less grandparent available at age 30 has a permanent effect on the likelihood of being mother until age 35. The same conclusion holds until age 44 when we look at women affected at age 39. We also find that lack of grandparental availability at a certain age amplifies the effects on number of children in the following 5 years, consistent with the idea that grandparents play an important role in the decision to have the first child. As before, all effects are not significant in the absence of family ties. As official statistics suggest that less than 4 percent of children in the country

were born from mothers aged 40 and above in the last two decades, we argue that at least for part of the cohorts in our sample the fertility effects of delayed retirement are likely to be permanent. Furthermore, even if delayed motherhood cannot be completely ruled out as an explanation, many studies in demography have shown that postponement of fertility decisions has an effect on completed fertility (see, for example, te Velde et al. 2012).

We shed light on the possible channels at work behind these results. We start by investigating whether reliance on grandparental help reflects preferences or follows from financial constraints and/or lack of access to formal childcare. We show that the effects on fertility do not vary with household wealth once family ties are taken into account, and that this conclusion is robust to the indicator of wealth employed. The same conclusion holds up when we investigate the role of publicly provided childcare. We therefore conclude that the effects of grandparental availability are driven by preferences and social norms, consistently with the idea that familistic societies attribute more value to members of the extended family.

We also explore whether the availability of grandparents affects female labor supply. Grandchildcare helps reconcile work with family life, thus reducing the opportunity cost of motherhood. Moreover, by increasing labor force participation the availability of grandchildcare raises household income, which in turn has a positive effect on fertility to the extent that children are normal goods. Our results show that grandparental availability impacts positively on the likelihood of being at work, but only at those ages when no impact on fertility is found. We take this as evidence that the fertility effect is not driven by a concurrent change in household income. Furthermore, the results do not show a difference between weak and strong family ties households, which we interpret as evidence that the effect of grandparental availability on labor supply is not driven by the monetary transfers that typically vary with the strength of family ties.

The remainder of the paper is organized as follows. Section 2 describes pension arrangements in Italy, introduces the data and explains the sample selection criteria adopted in the empirical analysis. Following a brief graphical analysis in Section 3, Section 4 first discusses the effects of pension reforms on labor supply of the parental generation, and then shows the fertility effects of delayed retirement. Section 5 discusses the mechanism behind our results and the role of alternative channels, and also provides falsification tests for the validity of our identifying restrictions. Conclusions and policy implications are deferred to Section 6.



## 2 Institutional background and data

### Pension arrangements in Italy

In the time window relevant to our analysis, pension benefits were conditional on eligibility obtained through *old age* or *seniority* criteria. In the former case benefits could be claimed after having reached a certain statutory age set by law. In the latter case eligibility depended on the number of years of contributions accrued, independently of age. Eligibility for pension benefits was obtained whatever of the two conditions was met first.

Until 1992 replacement rates were high, pension benefits were computed on the basis of the earnings-model and generous early retirement schemes were available. The ratio of pension benefits to GNP reached almost 16 percent in 1992, the highest value among industrialized countries. To respond to the growing unbalance, three reforms were rolled out between 1992 and 1997. The aim was to tighten eligibility criteria by increasing the statutory retirement age and the minimum years of contributions, abolishing seniority criteria for individuals who entered the labor market after 1995, and indexing pension benefits to prices rather than wages.<sup>8</sup>

The change to eligibility conditions was massive and is most simply understood by considering Figure 1, where reported is the minimum retirement age calculated from seniority and old age criteria (for a discussion of the institutional details underlying the computation see Bottazzi et al. 2006 and Battistin et al. 2009). The figure sets out the comparison of consecutive cohorts of individuals indexed by the year in which they reach age 50. A 13 year window is considered that spans the period relevant to our empirical exercise (1992-2004). A breakdown is considered by gender and sector of activity (public, private and self-employment), which represent the dimensions explicitly mentioned in the law. We also stratify by educational attainment (high school drop-outs, high school graduates and college graduates), which we use to compute potential years of contributions accrued since entrance in the labor market. We assume continuous working careers from the year when the highest

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<sup>8</sup>The first of these reforms was presented in the second half of 1992 by the Government led by Giuliano Amato, and it is known as ‘Amato’ reform. The other two reforms were passed in 1995 and 1997, when Lamberto Dini and Romano Prodi, respectively, were in charge. These reforms are known as ‘Dini’ and ‘Prodi’ reforms. In 2001 the government led by Mario Monti abolished seniority pensions and introduced for early pension scheme, which is accessible by male (female) workers who contributed for at least 42 (41) years. It will follow from the sample selection criteria that all cohorts considered entered the labor market before 1995. This is why we maintain the distinction between seniority and old age criteria in Figure 1.

qualification was attained, and impose a common age of entrance in the labor market for all individuals sharing the same educational attainment (15, 19 and 24 for the three incremental categories considered, these being ages when the qualification is typically attained according to the Italian education system).

The evidence suggests that for the cohorts considered eligibility for seniority pensions was, by and large, the binding requirement. For example, until 1992 males employed in the private sector qualified for old age pensions at age 60, and for seniority pensions at any age provided that they had accumulated at least 35 years of social security contributions. As a result, until 1992 male private employees with a continuous working career from age 15 could retire as early as age 50. Accordingly, high school drop-outs working in the private sector aged 50 in 1992 are eligible for seniority pensions, but fall 10 years behind eligibility for old age pensions (see the left hand side graph in the top panel of Figure 1). College graduate in the private sector entered the labor market 9 years later, and thus in 1992 cannot claim pension benefits (see the right hand side graph in the top panel). Notably, the minimum number of years of contributions for public workers was 20 up to 1992, making retirement not uncommon for individuals in their forties.

In the new regime the statutory retirement age was raised for private sector employees (e.g., from 60 to 65 for males), but not for public employees. Access to seniority pensions still requires at least 35 years of contributions, but provided that a minimum age condition is also met. This explains the gradual increase in years to eligibility that is observed as we move to the right of each panel. It emerges that relatively close cohorts of individuals faced, because of the regulatory interventions, sharp changes to their eligibility rules.

## Main Sample

We use data from the wave of the *Multiscopo Survey*, conducted by the Italian National Statistical Office in 2009 and released in October 2012. In particular, we use the *Famiglia Soggetti Sociali - Condizione Infanzia (Family and Social Subjects)* section of the survey. This is the third wave of a large cross sectional survey conducted every six years that collects detailed retrospective information on employment occasions and fertility decisions for each member of the sampled household. The frame is designed to yield a sample of about 18,000 households representative of the Italian population.

Our setting considers three generations of individuals. We will label as *grandparents* those for whom we define the pension reform status in the 1990s. Fertility will be measured for the *offspring* of this group. Also we will at times refer to children of the latter generation, which we will label as *grandchildren*. The offspring generation is used as pivotal group to define the working sample.

We select married or co-habiting couples whose female member is aged between 23 and 40 during the reforms roll out (1992-2004). It follows that the working sample consists of females of the offspring generation born between 1952 (i.e., aged 40 in 1992) and 1981 (i.e., aged 23 in 2004). According to official statistics, average age at first child for these cohorts is 29. We keep only couples with at least one parent alive in 2009 (over 96% of the observations for the cohorts selected). Individuals were interviewed in 2009, and detailed information was collected for both members in the couple on life cycle employment and fertility decisions until that time. The data structure is summarised in Panel A of Table 1, which is indexed to age and cohort of birth of the female member of the couple and reports the calendar year of the event history module used to define the outcomes of interest.

Other than event history data, the survey collects unique information on a broad spectrum of demographics describing the social background of the family. In particular, it provides detailed information on family structure, current and past close-knit networks and informal help and assistance received during critical events, life of the couple, relationship with the family of origin, help provided to children by family members and relatives, permanence of young adults in the family, careers of all family members and social mobility. We will refer to the 6,014 couples in this group as ‘Main Sample’, for which descriptive statistics are presented in the left hand side panel of Table 2.

Most importantly for the purpose of this paper, for both members of the couple, demographics were collected on the families of origin. These consist of education, year of birth and a coarse indicator of the main occupation of both the father and the mother of the interviewee. By using these variables and the rules described in Section 2, we imputed pension eligibility of all members in the family of origin. It follows that we are able to retrieve labor supply and fertility information at various ages of the female member of the Main Sample, and relate these to the pension eligibility status at all ages of members of her family of origin as well as of those of her partner.

## Sample of Grandparents

We use year of birth of members in the family of origin to construct an additional sample. This consists of individuals interviewed in 2009 and born in a time window that matches that of grandparents in the Main Sample. Summary statistics for the year of birth of grandparents as obtained from the Main Sample are in Table 2, while the full distribution is presented in Figure A.1. By considering these figures we select males and females born between 1925 and 1955 with children, regardless of the marital status declared in 2009. This yields a sample with 5,345 males and 5,840 females, which we will label as ‘Sample of Grandparents’ . Replicating the procedure followed above, for all individuals in this sample we impute the pension eligibility status at various ages. We can therefore define the employment life cycle histories and retirement decisions for all individuals in the Sample of Grandparents, and relate these to the exogenous changes introduced by the reforms.

Differences with the Main Sample follow from data limitations that preclude the use of the same selection criteria. For example we do not observe the family status of sons and daughters in the Sample of Grandparents. Moreover, some of the difference may depend on the fact that information on grandparents is self-reported in the Sample of Grandparents and reported by a proxy respondent in the Main Sample. The use of weights to align the distribution of observables in the two sample leaves unaffected the main conclusions from our analysis.

## 3 Descriptive statistics and graphical analysis

### Pension eligibility and labor supply

Our investigation of pension reforms begins by deriving descriptive evidence in Figure 2 that is suggestive of sizeable effects on labor market participation of individuals in the Sample of Grandparents. The graphical analysis presented is derived according to the following procedure. As in Figure 1, the horizontal axis runs over groups indexed by the year in which the individual reaches age 50. The top panel reports, for each cohort, the average minimum retirement age of individuals calculated from seniority criteria as explained above. The bottom panel reports cohort percentage of employed individuals at 53 and 55, as the available empirical evidence suggests a substantial transition to retirement in this age range

before 1992. To limit the number of figures, we present results only for male individuals.

The discontinuity in employment probabilities depicted in the bottom panel mirrors the discontinuity of pension eligibility in the top panel. Bottazzi et al. 2006 (see their Table 1) show that the institutional changes introduced by the reforms increased up to 5 years the retirement age for the cohorts in the Sample of Grandparents.

We will use between cohort variation in pension arrangements as an exogenous shock to the labor supply of grandparents, and through this to the available time they could devote to the care of grandchildren. The source of variability employed is presented in Figure 3, which is computed from the Main Sample. The horizontal axis refers to the cohort of birth of the female member of the couple. Each point on the vertical axis reports the residualised total number of eligible grandparents in the household at different ages of the female member of the couple, residuals being taken with respect to age and education of grandparents. It is clear that females born in the 1970s lived their twenties and thirties in a setting with a substantially lower potential supply of childcare with respect to older peers born in the 1960s. The question is whether this change induced by the implementation of pension reforms reflects into differential fertility decisions.

## **Family ties and the role of culture**

Using a number of variables on the relationship of individuals in the Main Sample with their families of origin, we derive an indicator for the strength of family ties. For both members of the couple we have information at time of interview on the place of residence of their parents, the modality and frequency of contacts (visits or telephone calls) and whether they meet regularly for lunch or dinner over Sundays or weekends. In addition, we have information on whether the couple at the time of marriage received financial help to buy the house, and on parental place of residence at that time. We extract the first principal component from 6 variables spanned by this information, and standardize the index so that it increases with the extent of family ties. We then attribute *strong* family ties to those couples with values of this index above the sample median. Figure A.2 plots the geographic distribution of the percentage of households with strong family ties, and delivers a picture consistent with evidence that others have already documented from different data (see, for example Alesina and Giuliano 2014). Despite the expected North-South gradient, it is worth noting that each

region of the country presents a large fraction of households with strong ties.<sup>9</sup> Summary statistics for the two groups are presented in Table 3.

Implicit is the idea that pension reforms did not alter the extent of family ties, for example through effects on mobility of individuals that depend on the working horizon of their parents. This is an assumption for which we cannot provide evidence using one wave of data, as information on proximity of grandparents is collected only at the time of interview. We circumvent the problem by pooling data from the three existing waves of the *Multiscopo Survey*. Although the different structure of some modules across survey waves does not allow us to pool data for estimating our main equations of interest, information on family ties is consistently collected over time. We use this feature to contrast indicators of proximity between grandparents and adult offsprings as measured in three occasions (1998, 2003 and 2009). We select cohorts of grandparents by taking a five-point window centered at those who were the first to be affected by reforms (i.e. those born in 1946 and aged 50 in 1996, as seen in Figure 2). Straightforward calculations show that by pooling cohorts born between 1940 and 1945 (pre-reform) we can measure proximity at all ages between 53 and 68.<sup>10</sup> Similarly by pooling cohorts born between 1946 and 1950 (post-reform) proximity can be computed at all ages between 48 and 63.

Pension reforms did not impact on family ties. We set out the comparison between pre- and post-reform cohorts with respect to various indicators of distance, and show that family ties were not affected by pension reforms. We kept all individuals born between 1940 and 1950, and computed (a) percentage living in the same municipality of their offspring; (b) percentage having lunch or dinner with offspring regularly on Sundays; (c) percentage meeting offspring at least once a week; (d) percentage calling offspring at least once a week.

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<sup>9</sup>Consistent with Alesina and Giuliano (2014), we show in Figure A.2 that family ties are negatively correlated with female labor force participation in 2009 (although the same conclusion holds up when different years are considered). Moving causality to the background, the figure is suggestive of persistent effects of cultural norms across economic conditions and of a more traditional role for the woman in environments with strong family ties. Also presented in Figure A.3 is the distribution across areas of per-capita number of seats at kindergarten in 2009, which we used to proxy the supply of public (formal) childcare. This information, collected by the Italian National Statistical Office, is available only from 2003 and is therefore not used in equation (3). The association between ties and childcare availability is worth of notice.

<sup>10</sup>Proximity is reported in 1998, 2003 and 2009. Thus for any cohort of parents  $c$  we can compute a measure of distance from adult offspring when individuals in the cohort are aged  $a$ ,  $a + 5$  and  $a + 11$ , with  $a = 1998 - c$ .

For each indicator of proximity,  $t_{ca}$ , we estimate:

$$t_{ca} = \mu(a, c) + \beta \mathbb{1}(c \geq 1946) + \eta_{ca}, \quad (1)$$

where  $c$  and  $a$  are, respectively, cohort and age,  $\mu(a, c)$  is the parametrization adopted for age and cohort effects (quadratic polynomials),  $\mathbb{1}(c \geq 1946)$  is an indicator for post reform cohorts and standard errors are clustered by cohort. Estimation is carried out by limiting the analysis to the age range 53 – 63 to ensure full support. Results are presented in Table 4, and show relatively precise zeros for the post reform coefficient associated to all indicators of family ties.<sup>11</sup>

## 4 Empirical framework

### Effects of pension reforms on parental labor supply

Moving from the non-parametric analysis above, we now investigate the statistical relevance of the effects documented by framing the problem in a regression setting. We start from information in the Sample of Grandparents. Labor force participation of individual  $i$  at age  $a$ ,  $y_{ia}$ , depends on the indicator for pension eligibility at age  $a$ ,  $z_{ia}$ , and on a set of demographics and area-level characteristics that are age-specific,  $\mathbf{w}_{ia}$ . The set of demographics comprises variables that vary over time and, through this, with age of individuals, along with birth cohort dummies. Conditional on age and demographics, identification of the coefficient on  $z_{ia}$  is obtained using variability on pension eligibility criteria across cohorts. In light of the sample selection criteria adopted, we restrict the analysis to the range  $a = 50, \dots, 57$  for high school dropouts and  $a = 50, \dots, 60$  for high school graduates as, away from this range, little variability in  $z_{ia}$  is observed in our data. We report results from the following specification estimated by gender:

$$y_{ia} = \delta_a + \sum_{a=50}^{60} \alpha_a z_{ia} + \beta \mathbf{w}_{ia} + \varepsilon_{ia}, \quad (2)$$

where  $\delta_a$  is an age specific effect and we impose that the coefficients on  $\mathbf{w}_{ia}$  are constant with age as results proved robust to this choice. In our specification,  $\mathbf{w}_{ia}$  consists of a full

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<sup>11</sup>The graphical analysis in Figure A.4 also confirms substantially parallel age profiles for family ties for pre and post reform cohorts. As an alternative robustness check, we experimented with different definitions of family ties to limit the spurious effects of differential mobility between pre- and post-reform cohorts. We defined ties independently of proximity relying only on the frequency of telephone contacts. It turns out that this alternative definition yields qualitatively the same results presented in Table 6 below.

set of dummies for region of residence and educational attainment. Throughout the analysis standard errors are clustered by cohort, education and sector of activity, which together define the level of variability of the variable  $z_{ia}$ .

Results from specification (2) are reported in Table 5, separately for males and females. The breakdown by educational attainment is also considered, as the age range relevant to retirement decisions varies importantly along this dimension. The focus here is on the effects of introducing more stringent eligibility requirements on labor supply. Because of this, equation (2) is estimated excluding homemakers. We define this group by selecting females who have been permanently out of the labor force over the life cycle. This group represents almost 40 percent of females in the Sample of Grandparents.

Eligibility for pension benefits has a negative effect on male labor force participation at all ages, and this effect increases as the individual ages. This can be seen from columns (1) and (4), where results are reported by gender. For example, eligibility acquired for males by age 55 makes retirement at that age more likely by about 9 percent. As pension reforms gradually increased old age requirements to 65 and 60 for males and females, respectively, it is reassuring to notice that the effects in column (4) shrink as female individuals approach age 60. Columns (2) and (3) make clear that age-specific effects for males are non-parametrically identified using information for individuals with different educational qualifications. Columns (5) and (6) convey similar information in the sample of females.

Overall results point to important effects of pension reforms on labor force participation, and are in line with previous evidence documented from different data (Manacorda and Moretti 2006 and Battistin et al. 2009). In particular, the regression discontinuity strategy in the latter paper shows that for a large portion of individuals the decision to exit the labor market was taken upon obtaining eligibility.

## **Fertility effects of delayed retirement**

We use the Main Sample to estimate the effects of grandparental availability on fertility at all ages between 23 and 40. The identification strategy employed is easily understood by looking at Panel A of Table 1. Consider the column indexed to age 30. Females born in 1965 reach this age before the reforms, in 1995. The dark shaded area in the column refers to cohorts entering their thirties when the regulatory changes were at a peak (1996 to 2000).



Our sample selection ensures to observe the same number of cohorts in years before (1992 to 1995) and after (2001 to 2004) these changes. The comparison between the 1965 and the 1966 cohorts identifies the ‘contemporaneous’ effect of pension reforms at age 30 for latter cohort. This effect is instantaneous in the sense that both cohorts completed their twenties in the absence of regulatory changes, and were affected by reforms one year apart.

Estimation is carried out using a flexible parametric specification. Fertility of female  $j$  at age  $a$  is measured by a dummy for being mother at that age,  $f_{ja}$ , over the range  $a = 23, \dots, 40$ . The following specification is considered:

$$f_{ja} = \delta_a + \sum_{a=23}^{40} \gamma_a \bar{z}_{ja} + \beta \mathbf{x}_{ja} + u_{ja}, \quad (3)$$

where  $\delta_a$  is an age specific fixed effect,  $\mathbf{x}_{ja}$  are age-specific demographics and the variable  $\bar{z}_{ja}$  is computed as number of members in the family of origin (parents and parents in law) who are eligible for pension benefits when the female member of the couple is aged  $a$ . In order to limit the number of estimated coefficients and to aid the interpretation of results we define equally spaced age bands spanning the 23 – 40 interval. Identification of these coefficients rests upon the variability in Figure 3.

Due to coarse information on the sector of activity for members in the family of origin, we impute pension eligibility from cells defined by gender and education using rules for private sector workers (i.e. using the top row of figures from both panels in Figure 1). We do so also for homemakers in the families of origin, which can be identified with some caveats that we discuss in Section 5. The inclusion of homemakers in the grandparental generation does not affect the validity of our identification strategy. This group consists of ‘never takers’ with respect to pension reforms, and thus does not convey useful information for estimating the parameter we are after.

Controls in  $\mathbf{x}_{ja}$  can be grouped into three categories. First, we use variables that are directly related to the couple; these are education of head and spouse, age of the male member, region of residence and regional female employment rate. Second, we use characteristics that are related to the composition of the family of origin and which are member specific: dummies for being still alive, age and education. The latter variable is meant to net off lifetime resources in the family, which most likely are transmitted across generations; age effects are instead used to model differential propensity or availability of older members to provide

childcare. Finally, we include number of siblings of couple's members to model the potential competition for grandparental time between young relatives, and a dummy for being the first born male in the family of origin to control for preferences frequently encountered in familistic environments.

Delayed retirement of parents affects fertility at all ages above 30, 29 being the average age at first child for the cohorts considered. Columns (1)-(3) of Table 6 report the effect of number of grandparents available on the probability of being mother. Column (1) indicates that one additional grandparent available at age 30 increases the likelihood of being mother by 2.5 percent. The effects become larger at older ages, for example being 3.4 percent at age 39. In columns (2) and (3) we investigate the interplay with cultural factors by stratifying for family ties. We find that column (1) masks important heterogeneity along this dimension, as the effects of grandparental availability come almost entirely from the most familistic environments. The estimated coefficients for weak ties are up to one third those for strong ties, and never significant. Columns (4)-(6) consider the effects on number of children. A drop in the supply of available grandparents affects total fertility during child-bearing years, but only for the group with strong ties.

There is a vast empirical literature on the role of culture and family ties for fertility and female labor supply decisions. The general conclusion is that social norms in Southern European countries affect living arrangements, also being strong predictors of a more traditional role of the woman in the society. Youths move out of parental home for marriage, do not cohabit, and the male breadwinner culture affects both female labor market participation (Alesina and Giuliano 2010) and fertility decisions (Fernández and Fogli, 2009). The results in column (7) of Table 6 show a negative association between the probability of living with parents and their eligibility for pension benefits. The finding is consistent with the interpretation offered by Manacorda and Moretti (2006) on the role of parents in the nest-leaving process. Parents' labor income allows them to offer their children higher consumption in exchange for their presence at home. Manacorda and Moretti (2006) use the same pension reforms that we consider here to instrument for disposable income in the household. Column (7) offers a reduced form interpretation of their results, implying that young individuals whose parents are affected by reforms delay exit from parental home.

In columns (8)-(9) we focus on households with weak and strong family ties. Results

in columns (2) and (8) are consistent with the idea in Manacorda and Moretti (2006), but only for families with weak ties. The effects in column (9) are almost identical in size and opposite in sign to the effects in column (3). This suggests that the effect on fertility in the presence of strong ties operates over and above the effect on living arrangements. There are additional reasons to believe that the readiness for leaving the family if the ‘bribe’ is not adequate, as suggested by Manacorda and Moretti (2006), is not the most plausible channel at work given the institutional setting in Italy. Pension reforms have meant not only the postponement of retirement but also the reduction of pension benefits. As shown in Bottazzi et al. (2006), the effect on pension wealth is negative and the offset between private and pension wealth is below one, which implies a negative effect on overall wealth. Therefore, it is hard to describe pension reforms as a positive shock to wealth. In addition, even if only what matters is current disposable income, liquidity problems are unlikely to play a role. As discussed by Battistin et al. (2009), employees receive a large bonus payment upon retirement (technically: a severance pay), which implies that one would expect parents who retire being less cash constrained than those who do not retire.

## Lagged Effects

Table 6 does not distinguish between changes in timing - a postponement in the decision to become mother - as opposed to changes in completed fertility - a permanent, negative effect on fertility. However, with obvious limitations due to the timing of pension reforms, we can use the longitudinal dimension of the data to check if the ‘contemporaneous’ effect still persists after five years. For example, as interviews were conducted in 2009, the longitudinal dimension of the data allows us to study whether the effect at age 30 in Table 6 persists at age 35. Nevertheless, the five-year window offers an interesting juxtaposition with the effects of pension reforms on retirement age documented in Section 3.

The lagged effects on fertility are persistent in the five-year window considered. This can be seen from Table 7, which reports figures after one, three and five years. Estimates are obtained from equation (3), the outcomes considered being  $f_{ja+1}$ ,  $f_{ja+3}$  and  $f_{ja+5}$  respectively. Panel B of Table 1 describes the cohort design used to estimate these equations. Panel A of Table 7 shows that lack of grandparental availability at age 30 has a negative effect on the likelihood of being mother in the following five years. The same result applies to all

remaining age groups above 30. Consistent with Table 6, the effect is solely for couples with strong attachment to their families of origin. The effect doesn't decrease with time, despite grandparents should gradually accrue eligibility for retirement over the five-year window (Bottazzi et al. 2006). Panel B of Table 7 considers the effect on number of children which, if anything, increases over time for all age groups. Results are suggestive of the fact that the availability of grandparents plays an important role in the decision to have the first child.

Official statistics on total fertility rates in the country show that, in the last two decades, less than 4 percent of children were born from mothers aged 40 and above (ISTAT 2013). Although the affected cohorts of women in our data have not yet reached the end of their childbearing years, it seems reasonable to assume that fertility decisions on the first child are usually taken, at the latest, in the thirties. This is most likely true in the most conservative families and areas of the country. Furthermore, available evidence on several countries shows a sizable effect of postponement on completed fertility. Recent examples are te Velde et al. (2012) with micro-simulation evidence on Austria, Czech Republic, The Netherlands, Spain, Sweden, and West Germany for years 1970, 1985 and 2007; Billari and Borgoni (2005) with micro-data evidence on Italy, Spain, Hungary and Sweden; Kohler et al. (2001) with evidence on twin Danish data.<sup>12</sup>

Bearing this in mind and considering the results in Table 7, we expect that at least for the oldest cohorts of women in our data results may signal an effect on completed fertility rather than a transitory effect due to postponement.

## **Grandmothers versus grandfathers**

As in a familistic society the division of labor (and the specialization) between men and women is pronounced, the question arises of whether the role of grandmothers is somewhat special compared to that of grandfathers. If this is the case, the preference for grandmothers may conceal important non-linearities in the effects documented. Other research has discussed variation of the quantity (and quality) of grandparental childcare between paternal and maternal kin (see Danielsbacka et al. 2011 and references therein).

We find that fertility effects in Table 6 and Table 7 are solely driven by the availability of maternal grandmother. This can be seen from Table 8, which reports results from equation

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<sup>12</sup>Kohler et al. (2002) focus on the emergence of lowest-low fertility in Europe in the 90's and argue that recuperation effects are not strong enough for postponement not affecting completed fertility.

(3) estimated for couples where both maternal and paternal grandparents are alive. Here effects on the likelihood for being mother are estimated simultaneously, modelling grandparents' availability by type of grandparent in the same equation.<sup>13</sup> Results point to important gender differences that are consistent with a more traditional role of the woman for the provision of childcare. This interpretation is reinforced once we consider the difference between column (2) and column (3), as gender differences are almost entirely driven by the presence of strong family ties. Columns (4)-(6) of Table 8 show the corresponding lagged effects as in Table 7. Similarly, we find statistically significant, and mostly larger, effects of the availability of maternal grandmothers for strong family tied households five years after.

## 5 Alternative channels at work and placebo tests

### Preference for grandparental childcare versus resources

The results presented so far are silent about the channels driving the effect of grandparental eligibility on fertility of their offspring. The evidence documented is consistent with strong preference for grandparental childcare. At the same time, the decision to rely on grandparents may be driven by the lack of affordable formal childcare opportunities.

To evaluate the importance of households resources for fertility decisions, we interact two proxies of wealth with  $\bar{z}_{ja}$  in equation (3). The first proxy is based on educational attainment of family members, the second on house size. Results are presented in Table 9: columns (1)-(3) for the former and columns (4)-(6) for the latter proxy. In either case we conclude that the effects documented in Table 6 remain also in the absence of financial constraints. Using the education proxy, 'high wealth' households are defined by considering the highest educational attainment of the head and the spouse. The cut-off is set to high school graduates, although results are robust with respect to the definition adopted. The house size indicator first computes per-adult number of rooms in the house, and then classifies households over and below the area average to adjust for housing market prices. The effects of family ties dominate those of financial constraints, thus unveiling a latent taste for grandparental childcare in child-bearing decisions. The fertility decisions of close-knits are substantially unaffected by resources: effects estimated for 'low wealth' and 'high wealth' couples are similar and, if anything, larger in the latter group when education is considered. The house size proxy also

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<sup>13</sup>Due to limited variability in the data, the age range considered is 23 – 37.

does not yield any appreciable difference in the effect of pension eligibility between high and low income families.

We also take a broader view of resources and classify as ‘high wealth’ those households living in areas with kindergarten coverage above the national median. We therefore exploit variability arising from close-knits with weak and strong ties living in socio-economic environments offering good coverage of public childcare. Figures released by the National Statistical Office indicate a strong geographical gradient in the per-capita number of kindergarten seats. Interestingly enough, this pattern is the mirror image of the geographic distribution of family ties in the country. Not only the South is distinguished by persistently higher unemployment and lower per-capita income, but it also presents a substantially lower number of public structures than Northern and Central regions (see Figure A.3 in the Appendix). For example the percentage of local authorities offering (free or almost fully subsidised) formal childcare varies between 24.3% in the South and 82.6% in the North-East.<sup>14</sup>

Columns (7)-(9) in Table 9 suggest that improved access to public childcare attenuates the effect of grandparental availability, but not in the presence of strong ties. The results replicate the same patterns documented in Table 6, and are consistent with the view that social norms shape preferences, and that familistic societies attribute more value to childcare provided within the extended family (Postlewaite 2011).

## Fertility decisions with inactive grandmothers

Changes in pension legislation should not affect availability of homemakers as potential providers of childcare. We can use this idea to define a placebo test for the validity of our approach. We estimate equation (3) by selecting in the Main Sample only couples where grandmothers or their daughters are homemakers.<sup>15</sup> Results are presented in Table 10.

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<sup>14</sup>Italy is characterised by important differences in availability of public childcare between the ages of 0 – 3 (infant-toddler) and 3 – 6 (pre-school). While the country performs well, compared to European standards, for the latter age group (90 percent of children enrolled), enrolment in public childcare at earlier ages is much less common (15 percent of children). The formal childcare market for the 0 – 3 group is mainly public, the availability of private schools being more widespread in areas where also the public system is more developed. Private providers are mostly religious institutions, non-profit organizations, and firms offering childcare on the workplace. See Brilli et al. (2013) for more details. Kindergarten in Table 9 and Figure A.3 in the Appendix refer to public infant-toddler schools.

<sup>15</sup>The status of grandmothers is based on survey information about the working status of parents when the respondent was 14. Inactive mothers at that age are defined as homemakers. Of course inactivity at that age may not necessarily imply inactivity during child-bearing years of the female respondent. Back of the envelope calculations presented in Figure A.5 shed light on the extent of misclassification that we could possibly face by assuming that inactivity of mothers in the early years of a respondent’s life implies

Despite the admittedly lower precision resulting from these sample cuts, it is worth noting that the coefficients on  $\bar{z}_{ja}$  are roughly half those in columns (1)-(3) of Table 6. The results presented in columns (4)-(6) of Table 10 suggest that the role of grandparents is negligible when mothers are homemakers.

## Labor supply of mothers

Grandchildcare is a way for parents to help their children. Table 6 relates differences in fertility to availability of grandparents, but neglects other margins through which economic circumstances may come into play. One of such margins of adjustment is labor supply. Childcare provided by mothers (and, possibly, fathers) may allow daughters to participate more in the labor market. Furthermore, Table 10 implies that the results documented for fertility are driven by working mothers. This raises the question of whether the labor supply of the female member of the couple responds to changes in pension eligibility of grandparents. Table 11 reports results from equation (3) using, on the left hand side, labor force participation of the female member of the couple. The outcome variable is a dummy taking value one if the woman is employed, either full-time or part-time, and is defined at all ages.<sup>16</sup> Columns (1)-(3) refer to ‘contemporaneous’ effects, while columns (4)-(6) refer to ‘lagged’ effect. The ‘contemporaneous’ effects appear to be statistically significant mostly for females in their twenties.

The fact that pension reforms, by raising the retirement age of the grandparental generation, affect the labor supply of women is consistent with what is found in other studies on the effect of grandchildcare on labor supply (see Dimova and Wolff 2011 and references therein), but is a potential challenge for the interpretation of results. In particular, if children are normal goods, the increase in female employment implies an increase in household income, which should in turn increase motherhood. This is unlikely to be a serious concern in our analysis, since results indicate a positive effect on participation at those ages in which the effect on motherhood is zero. Moreover, results in Table 11 are similar for households with strong and weak family ties. To the extent that taste for co-residence differs with strength

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permanent inactivity. We estimate the incidence of misclassification at 20 percent.

<sup>16</sup>The use of retrospective data to reconstruct labor supply decisions over the life cycle makes the possibility of recall errors concrete. While the use of retrospective modules may be less of a problem to collect information on one’s parents and children dates of birth, recalling labor market participation may be more problematic. This is a possible concern for the interpretation of results in Table 11 and Table 5.

of family ties and co-residence reduces monetary transfers, our results implies that the effect of grandparental availability on labor supply is not driven by the monetary transfers, an issue that is investigated in Ogawa and Ermisch (1996) and in Sasaki (2002). Finally, the ‘lagged’ effects 5 years later are small in size and never significant. Given that pension reforms delayed retirement by up to five years, our results suggest that the effect on labor force participation, while being economically significant, is only temporary.

## 6 Conclusions

Among the many ways in which generations are altruistically linked, the transfer of time for childcare plays an important role. Grandparents are often the primary providers of childcare across the social ladder and in various institutional settings, both in Europe and in the US. The effect of the availability of childcare on fertility decisions has been studied, but much less is known on the effect of grandparental childcare on the fertility decisions of the offspring generation. A recurrent issue is the possible simultaneity between grandparents’ labor supply decisions and those of their offspring.

The demographic transition has raised life-expectancy and therefore has increased the time grandparents can spend with their grandchildren. However, the concurrent pension reforms, by raising the retirement age, have had the countervailing effect on the time grandparents can devote to the care of grandchildren. Interestingly, changes in pension legislation can provide the source of exogenous variation to study the effect of availability of grandparents’ childcare on the fertility decisions of their offspring.

To assess the effect of grandparental childcare on fertility, we focused on Italy for three reasons. First, Italy scores a low fertility rate in comparison with countries at the same stage of the economic development and records the postponement of fertility decisions of women born after the Sixties. Second, Italy underwent in the last decades a series of pension reforms, which provide the exogenous variation needed for the analysis. Third, Italy is a country where the family plays an important role, but where the strength of family ties considerably varies in society.

Exploiting data on the grandparents and parents generation, we find that the reduced availability of grandparents has a negative effect of fertility, and that it is much so in families where the family ties are stronger. We also show the the effect of grandparents availability is



long lasting. The adverse effect on fertility can either be driven by preferences or by the lack of alternative childcare opportunities or by both. To shed light on the issue, we also explore the role of institutionalized childcare. To the extent that the effect is driven by parents' strong preferences towards grandparents' care, the availability of kindergarten should not attenuate the effect of availability of grandparents' care on fertility. Our results indicate that the availability of institutionalized childcare somewhat attenuate the effect on fertility, at a rate that is larger among the couple where family ties are weak. We interpret these results as evidence that the effect on fertility is mostly driven by preferences, but we cannot rule out a role for the availability of institutionalized childcare.

Overall, our evidence suggests that pension reforms have important side-effects on the transfers of time between the old and the young generations. While being unintended, the consequences of raising the retirement age of a generation affect the fertility decision of the offspring and have long lasting impact on the society as a whole.

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Table 2: Descriptive statistics for the working samples.

|                                   | Main Sample |         | Sample of Grandparents |        |         |
|-----------------------------------|-------------|---------|------------------------|--------|---------|
|                                   | Males       | Females | All                    | Males  | Females |
| Interviewee                       |             |         |                        |        |         |
| <i>Year of Birth</i>              | 1963        | 1966    | 1944                   | 1944   | 1943    |
| <i>High school dropout</i>        | 0.47        | 0.41    | 0.73                   | 0.69   | 0.77    |
| <i>High school graduates</i>      | 0.41        | 0.43    | 0.20                   | 0.23   | 0.17    |
| <i>College graduates</i>          | 0.12        | 0.16    | 0.07                   | 0.08   | 0.06    |
| <i>Private sector employee</i>    | 0.42        | 0.26    | 0.40                   | 0.46   | 0.34    |
| <i>Public sector employee</i>     | 0.19        | 0.17    | 0.21                   | 0.25   | 0.16    |
| <i>Self-employed</i>              | 0.26        | 0.11    | 0.21                   | 0.27   | 0.15    |
| <i>Living in Northern regions</i> |             | 0.42    | 0.42                   | 0.42   | 0.43    |
| <i>Living in Central regions</i>  |             | 0.17    | 0.19                   | 0.18   | 0.19    |
| <i>Living in Southern regions</i> |             | 0.41    | 0.39                   | 0.40   | 0.39    |
| Family of origin                  |             |         |                        |        |         |
| <i>Average year of birth</i>      |             | 1938    |                        |        |         |
| <i>Number parents alive</i>       |             | 2.73    |                        |        |         |
| <i>High school dropout</i>        |             | 0.85    |                        |        |         |
| <i>High school graduates</i>      |             | 0.13    |                        |        |         |
| <i>College graduates</i>          |             | 0.03    |                        |        |         |
| Number of individuals             |             | 6,014   | 11,085                 | 5,245  | 5,840   |
| Observations                      |             | 52,225  | 111,389                | 52,693 | 58,696  |

**Note.** The Main Sample consists of married or co-habiting couples whose female member is aged between 23 and 40 in the period 1992-2004. The Sample of Grandparents consists of males and females born in the period 1925-1955. Reported is the number of individuals, and the total number of observations that results from individual panel data at different ages. For details on selection criteria adopted see Section 2.

Table 3: Summary statistics by family ties.

|  | Family ties |       |        |
|--|-------------|-------|--------|
|  | All         | Weak  | Strong |
| Living in the same municipality of parents       | 0.72        | 0.46  | 0.95   |
| Having Sunday lunch with family                  | 0.27        | 0.15  | 0.38   |
| Meeting offspring regularly                      | 0.77        | 0.56  | 0.96   |
| Calling offspring regularly                      | 0.82        | 0.81  | 0.83   |
| Years to first child after leaving parental home |             |       |        |
| <i>within 1 year</i>                             | 0.39        | 0.35  | 0.43   |
| <i>within 3 years</i>                            | 0.69        | 0.64  | 0.74   |
| <i>within 5 years</i>                            | 0.81        | 0.77  | 0.85   |
| Number of individuals                            | 6,014       | 2,900 | 3,114  |

**Note.** Reported are summary statistics obtained from couples in the Main Sample by extent of family ties. The stratification considers couples above (strong) and below (weak) the median of our indicator of family ties computed as explained in Section 2.

Table 4: Pension reforms and family ties.

|                            | Distance from<br>parents | Having Sunday<br>lunch together | Frequency of<br>meetings | Frequency of<br>phone calls |
|----------------------------|--------------------------|---------------------------------|--------------------------|-----------------------------|
|                            | (1)                      | (2)                             | (3)                      | (4)                         |
| <i>Post reform cohorts</i> | -0.057<br>(0.049)        | -0.031<br>(0.029)               | 0.004<br>(0.038)         | 0.019<br>(0.039)            |
| <i>Age</i>                 | -0.093<br>(0.179)        | 0.314**<br>(0.101)              | -0.300*<br>(0.140)       | -0.320*<br>(0.144)          |
| <i>Age squared</i>         | 0.000<br>(0.002)         | -0.003**<br>(0.001)             | 0.002*<br>(0.001)        | 0.003*<br>(0.001)           |
| <i>Cohort</i>              | -0.001<br>(0.008)        | -0.004<br>(0.005)               | 0.011<br>(0.007)         | 0.014*<br>(0.007)           |
| <i>Cohort squared</i>      | 0.002<br>(0.002)         | 0.000<br>(0.001)                | 0.002<br>(0.001)         | 0.001<br>(0.001)            |
| Observations               | 4,711                    | 4,711                           | 4,711                    | 4,711                       |

**Note.** Reported are regression results of the extent of family ties on a dummy for cohorts of respondents affected by the reforms, see equation (1). Family ties are measured considering four indicators: (1) percentage of parents living in the same municipality of their offspring; (2) percentage of parents having lunch or dinner with offspring regularly on Sundays; (3) percentage of parents meeting offspring at least once a week; (4) percentage of parents calling offspring at least once a week. Robust standard errors in parentheses. See Section 3 for details on the estimation sample. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.



Table 5: Pension eligibility and labor supply.

|   | Males                |                                    |                                     | Females             |                                    |                                     |
|---|----------------------|------------------------------------|-------------------------------------|---------------------|------------------------------------|-------------------------------------|
|   | (1)<br><i>All</i>    | (2)<br><i>High school dropouts</i> | (3)<br><i>High school graduates</i> | (4)<br><i>All</i>   | (5)<br><i>High school dropouts</i> | (6)<br><i>High school graduates</i> |
| <i>Eligibility for pension benefits</i> |                      |                                    |                                     |                     |                                    |                                     |
| <i>Age 50</i>                           | -0.024<br>(0.015)    | -0.038<br>(0.021)                  | -0.011<br>(0.022)                   | 0.079**<br>(0.028)  | 0.122***<br>(0.035)                | 0.067<br>(0.037)                    |
| <i>Age 51</i>                           | -0.040**<br>(0.013)  | -0.077***<br>(0.019)               | -0.029<br>(0.023)                   | 0.028<br>(0.023)    | -0.035<br>(0.018)                  | 0.060<br>(0.038)                    |
| <i>Age 52</i>                           | -0.046***<br>(0.012) | -0.079***<br>(0.017)               | -0.029<br>(0.024)                   | -0.001<br>(0.022)   | -0.053**<br>(0.018)                | 0.002<br>(0.040)                    |
| <i>Age 53</i>                           | -0.065***<br>(0.015) | -0.096***<br>(0.022)               | -0.025<br>(0.027)                   | -0.001<br>(0.023)   | -0.059**<br>(0.021)                | 0.010<br>(0.042)                    |
| <i>Age 54</i>                           | -0.076***<br>(0.019) | -0.102***<br>(0.026)               | -0.010<br>(0.027)                   | -0.005<br>(0.024)   | -0.051*<br>(0.025)                 | -0.027<br>(0.042)                   |
| <i>Age 55</i>                           | -0.090***<br>(0.021) | -0.114***<br>(0.030)               | -0.019<br>(0.017)                   | -0.013<br>(0.022)   | -0.054*<br>(0.025)                 | -0.014<br>(0.028)                   |
| <i>Age 56</i>                           | -0.128***<br>(0.022) | -0.140***<br>(0.031)               | -0.073***<br>(0.019)                | -0.066**<br>(0.023) | -0.099***<br>(0.025)               | -0.080*<br>(0.031)                  |
| <i>Age 57</i>                           | -0.129***<br>(0.026) | -0.127***<br>(0.037)               | -0.134***<br>(0.026)                | -0.072**<br>(0.023) | -0.103***<br>(0.024)               | -0.100**<br>(0.038)                 |
| <i>Age 58</i>                           | -0.162***<br>(0.031) |                                    | -0.163***<br>(0.027)                | -0.130**<br>(0.039) |                                    | -0.102**<br>(0.038)                 |
| <i>Age 59</i>                           | -0.200***<br>(0.036) |                                    | -0.194***<br>(0.033)                | -0.084<br>(0.045)   |                                    | -0.064<br>(0.045)                   |
| <i>Age 60</i>                           | -0.180***<br>(0.034) |                                    | -0.175***<br>(0.034)                | 0.021<br>(0.041)    |                                    | 0.014<br>(0.042)                    |
| Observations                            | 43,106               | 27,639                             | 15,467                              | 31,619              | 21,132                             | 10,487                              |

**Note.** Estimates of equation (2) from the Sample of Grandparents by gender and educational attainment. The specification controls for age specific effects and a full set of dummies for region of residence and educational attainment. Standard errors are clustered by cohort, education and sector of activity. See Section 4 for details. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 6: Grandparental availability, fertility and living arrangements.

|   | Being mother        |                    |                      | Number of children |                    |                      | Living with parents  |                     |                      |
|---|---------------------|--------------------|----------------------|--------------------|--------------------|----------------------|----------------------|---------------------|----------------------|
|   | <i>Family Ties</i>  |                    |                      | <i>Family Ties</i> |                    |                      | <i>Family Ties</i>   |                     |                      |
|   | (1)<br><i>All</i>   | (2)<br><i>Weak</i> | (3)<br><i>Strong</i> | (4)<br><i>All</i>  | (5)<br><i>Weak</i> | (6)<br><i>Strong</i> | (7)<br><i>All</i>    | (8)<br><i>Weak</i>  | (9)<br><i>Strong</i> |
| <i>Number of grandparents available</i> |                     |                    |                      |                    |                    |                      |                      |                     |                      |
| <i>At age 23-25</i>                     | 0.000<br>(0.009)    | -0.001<br>(0.013)  | 0.009<br>(0.013)     | -0.018<br>(0.017)  | -0.018<br>(0.022)  | -0.002<br>(0.024)    | -0.008<br>(0.010)    | -0.015<br>(0.014)   | -0.008<br>(0.014)    |
| <i>At age 26-28</i>                     | 0.005<br>(0.009)    | -0.007<br>(0.013)  | 0.022*<br>(0.013)    | -0.012<br>(0.016)  | -0.023<br>(0.022)  | 0.011<br>(0.023)     | -0.019**<br>(0.009)  | -0.017<br>(0.013)   | -0.027**<br>(0.013)  |
| <i>At age 29-31</i>                     | 0.025***<br>(0.009) | 0.011<br>(0.013)   | 0.043***<br>(0.013)  | 0.026<br>(0.017)   | 0.004<br>(0.023)   | 0.060**<br>(0.024)   | -0.029***<br>(0.009) | -0.027**<br>(0.013) | -0.036***<br>(0.013) |
| <i>At age 32-34</i>                     | 0.026**<br>(0.010)  | 0.020<br>(0.014)   | 0.037***<br>(0.014)  | 0.022<br>(0.019)   | 0.006<br>(0.026)   | 0.050*<br>(0.027)    | -0.034***<br>(0.009) | -0.032**<br>(0.013) | -0.042***<br>(0.013) |
| <i>At age 35-37</i>                     | 0.028**<br>(0.011)  | 0.018<br>(0.016)   | 0.041***<br>(0.015)  | 0.029<br>(0.022)   | 0.015<br>(0.031)   | 0.053*<br>(0.029)    | -0.035***<br>(0.010) | -0.029**<br>(0.014) | -0.045***<br>(0.014) |
| <i>At age 38-40</i>                     | 0.034***<br>(0.012) | 0.026<br>(0.017)   | 0.045***<br>(0.016)  | 0.041*<br>(0.025)  | 0.017<br>(0.035)   | 0.070**<br>(0.033)   | -0.034***<br>(0.010) | -0.027*<br>(0.014)  | -0.046***<br>(0.014) |
| Observations                            | 52,225              | 25,357             | 26,868               | 52,225             | 25,357             | 26,868               | 52,225               | 25,357              | 26,868               |
| Couples                                 | 6,014               | 2,900              | 3,114                | 6,014              | 2,900              | 3,114                | 6,014                | 2,900               | 3,114                |

**Note.** Estimates of equation (3) from the Main Sample by extent of family ties (contemporaneous effects). The specification controls for education of head and spouse, age of the male member in the couple, region of residence and regional female employment rate, number of grandparents alive, grandparents' age and education, number of siblings of couple's members and a dummy for being the first born male in the family of origin. Standard errors are clustered at the household level. See Section 4 for details. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 7: Lagged effects of grandparental availability on fertility.

|   | One Year After      |                    |                      | Three Years After   |                    |                      | Five Years After    |                    |                      |
|---|---------------------|--------------------|----------------------|---------------------|--------------------|----------------------|---------------------|--------------------|----------------------|
|   | Family Ties         |                    |                      | Family Ties         |                    |                      | Family Ties         |                    |                      |
|   | (1)<br><i>All</i>   | (2)<br><i>Weak</i> | (3)<br><i>Strong</i> | (4)<br><i>All</i>   | (5)<br><i>Weak</i> | (6)<br><i>Strong</i> | (7)<br><i>All</i>   | (8)<br><i>Weak</i> | (9)<br><i>Strong</i> |
| <b>A. Motherhood</b>                    |                     |                    |                      |                     |                    |                      |                     |                    |                      |
| <i>Number of grandparents available</i> |                     |                    |                      |                     |                    |                      |                     |                    |                      |
| <i>At age 23-25</i>                     | 0.001<br>(0.010)    | -0.004<br>(0.013)  | 0.013<br>(0.013)     | 0.008<br>(0.010)    | -0.004<br>(0.015)  | 0.025*<br>(0.014)    | 0.017<br>(0.011)    | 0.001<br>(0.015)   | 0.037**<br>(0.015)   |
| <i>At age 26-28</i>                     | 0.010<br>(0.009)    | -0.007<br>(0.013)  | 0.032**<br>(0.013)   | 0.027***<br>(0.010) | 0.012<br>(0.014)   | 0.045***<br>(0.013)  | 0.032***<br>(0.010) | 0.023*<br>(0.014)  | 0.044***<br>(0.013)  |
| <i>At age 29-31</i>                     | 0.031***<br>(0.010) | 0.017<br>(0.014)   | 0.050***<br>(0.013)  | 0.036***<br>(0.010) | 0.026*<br>(0.014)  | 0.051***<br>(0.013)  | 0.031***<br>(0.010) | 0.017<br>(0.014)   | 0.049***<br>(0.013)  |
| <i>At age 32-34</i>                     | 0.024**<br>(0.010)  | 0.016<br>(0.014)   | 0.038***<br>(0.014)  | 0.029***<br>(0.010) | 0.018<br>(0.015)   | 0.045***<br>(0.014)  | 0.024**<br>(0.010)  | 0.011<br>(0.014)   | 0.042***<br>(0.014)  |
| <i>At age 35-37</i>                     | 0.027**<br>(0.011)  | 0.016<br>(0.016)   | 0.043***<br>(0.015)  | 0.029***<br>(0.011) | 0.016<br>(0.016)   | 0.046***<br>(0.015)  | 0.025**<br>(0.011)  | 0.011<br>(0.016)   | 0.044***<br>(0.015)  |
| <i>At age 38-40</i>                     | 0.033***<br>(0.012) | 0.023<br>(0.017)   | 0.048***<br>(0.016)  | 0.036***<br>(0.012) | 0.025<br>(0.017)   | 0.051***<br>(0.016)  | 0.028**<br>(0.012)  | 0.016<br>(0.017)   | 0.044***<br>(0.016)  |
| <b>B. Number of children</b>            |                     |                    |                      |                     |                    |                      |                     |                    |                      |
| <i>Number of grandparents available</i> |                     |                    |                      |                     |                    |                      |                     |                    |                      |
| <i>At age 23-25</i>                     | -0.016<br>(0.017)   | -0.020<br>(0.023)  | 0.006<br>(0.025)     | 0.003<br>(0.019)    | -0.011<br>(0.026)  | 0.033<br>(0.028)     | 0.023<br>(0.020)    | -0.002<br>(0.028)  | 0.061**<br>(0.029)   |
| <i>At age 26-28</i>                     | 0.001<br>(0.017)    | -0.016<br>(0.023)  | 0.030<br>(0.024)     | 0.035*<br>(0.018)   | 0.013<br>(0.025)   | 0.068***<br>(0.026)  | 0.052***<br>(0.020) | 0.031<br>(0.027)   | 0.084***<br>(0.028)  |
| <i>At age 29-31</i>                     | 0.039**<br>(0.018)  | 0.016<br>(0.024)   | 0.076***<br>(0.025)  | 0.066***<br>(0.019) | 0.036<br>(0.026)   | 0.110***<br>(0.027)  | 0.077***<br>(0.020) | 0.038<br>(0.028)   | 0.129***<br>(0.029)  |
| <i>At age 32-34</i>                     | 0.033*<br>(0.020)   | 0.012<br>(0.027)   | 0.069**<br>(0.029)   | 0.067***<br>(0.021) | 0.038<br>(0.029)   | 0.109***<br>(0.031)  | 0.075***<br>(0.022) | 0.039<br>(0.030)   | 0.123***<br>(0.032)  |
| <i>At age 35-37</i>                     | 0.041*<br>(0.022)   | 0.024<br>(0.031)   | 0.069**<br>(0.031)   | 0.064***<br>(0.024) | 0.043<br>(0.033)   | 0.098***<br>(0.033)  | 0.068***<br>(0.024) | 0.041<br>(0.034)   | 0.107***<br>(0.034)  |
| <i>At age 38-40</i>                     | 0.050**<br>(0.025)  | 0.022<br>(0.036)   | 0.085**<br>(0.035)   | 0.072***<br>(0.026) | 0.037<br>(0.038)   | 0.114***<br>(0.037)  | 0.072***<br>(0.027) | 0.031<br>(0.039)   | 0.119***<br>(0.038)  |
| Observations                            | 52,225              | 25,357             | 26,868               | 52,225              | 25,357             | 26,868               | 52,225              | 25,357             | 26,868               |
| Couples                                 | 6,014               | 2,900              | 3,114                | 6,014               | 2,900              | 3,114                | 6,014               | 2,900              | 3,114                |

**Note.** Estimates of equation (3) from the Main Sample by extent of family ties, using outcomes lagged by one year, columns (1)-(3), three years, columns (4)-(6), and five years, columns (7)-(9). The specification controls for education of head and spouse, age of the male member in the couple, region of residence and regional female employment rate, number of grandparents alive, grandparents' age and education, number of siblings of couple's members and a dummy for being the first born male in the family of origin. Standard errors are clustered at the household level. See Section 4 for details. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 8: Grandparental availability breakdown by origin and gender.

|                                       | Contemporaneous Effect |                     |                      | After Five Years    |                    |                      |
|---------------------------------------|------------------------|---------------------|----------------------|---------------------|--------------------|----------------------|
|                                       | Family Ties            |                     |                      | Family Ties         |                    |                      |
|                                       | (1)<br><i>All</i>      | (2)<br><i>Weak</i>  | (3)<br><i>Strong</i> | (4)<br><i>All</i>   | (5)<br><i>Weak</i> | (6)<br><i>Strong</i> |
| <i>Maternal grandmother available</i> |                        |                     |                      |                     |                    |                      |
| <i>At age 23-25</i>                   | 0.063**<br>(0.029)     | 0.067*<br>(0.039)   | 0.070*<br>(0.041)    | 0.051<br>(0.033)    | 0.020<br>(0.046)   | 0.092**<br>(0.045)   |
| <i>At age 26-28</i>                   | 0.029<br>(0.028)       | 0.017<br>(0.038)    | 0.059<br>(0.040)     | 0.051*<br>(0.029)   | 0.038<br>(0.042)   | 0.081**<br>(0.038)   |
| <i>At age 29-31</i>                   | 0.067**<br>(0.029)     | 0.031<br>(0.041)    | 0.126***<br>(0.041)  | 0.038<br>(0.027)    | 0.009<br>(0.039)   | 0.082**<br>(0.035)   |
| <i>At age 32-34</i>                   | 0.069**<br>(0.033)     | 0.042<br>(0.047)    | 0.106**<br>(0.045)   | 0.065**<br>(0.029)  | 0.016<br>(0.042)   | 0.115***<br>(0.038)  |
| <i>At age 35-37</i>                   | 0.073<br>(0.044)       | 0.029<br>(0.061)    | 0.129**<br>(0.064)   | 0.077*<br>(0.040)   | 0.011<br>(0.060)   | 0.146***<br>(0.056)  |
| <i>Maternal grandfather available</i> |                        |                     |                      |                     |                    |                      |
| <i>At age 23-25</i>                   | -0.032<br>(0.027)      | -0.052<br>(0.037)   | -0.001<br>(0.039)    | -0.021<br>(0.032)   | -0.066<br>(0.043)  | 0.027<br>(0.044)     |
| <i>At age 26-28</i>                   | -0.035<br>(0.029)      | -0.092**<br>(0.039) | 0.021<br>(0.040)     | -0.002<br>(0.030)   | -0.031<br>(0.043)  | 0.028<br>(0.039)     |
| <i>At age 29-31</i>                   | -0.004<br>(0.033)      | -0.046<br>(0.046)   | 0.038<br>(0.047)     | 0.033<br>(0.031)    | 0.001<br>(0.044)   | 0.060<br>(0.042)     |
| <i>At age 32-34</i>                   | -0.021<br>(0.043)      | 0.025<br>(0.062)    | -0.074<br>(0.057)    | 0.042<br>(0.036)    | 0.060<br>(0.054)   | 0.032<br>(0.049)     |
| <i>At age 35-37</i>                   | 0.085<br>(0.091)       | 0.162<br>(0.109)    | -0.137<br>(0.085)    | 0.025<br>(0.066)    | 0.051<br>(0.087)   | -0.061<br>(0.073)    |
| <i>Paternal grandmother available</i> |                        |                     |                      |                     |                    |                      |
| <i>At age 23-25</i>                   | -0.021<br>(0.025)      | -0.033<br>(0.037)   | -0.012<br>(0.034)    | 0.018<br>(0.030)    | 0.038<br>(0.044)   | 0.005<br>(0.041)     |
| <i>At age 26-28</i>                   | 0.033<br>(0.028)       | 0.042<br>(0.039)    | 0.025<br>(0.038)     | 0.044<br>(0.029)    | 0.059<br>(0.042)   | 0.030<br>(0.039)     |
| <i>At age 29-31</i>                   | 0.067**<br>(0.033)     | 0.090**<br>(0.045)  | 0.050<br>(0.046)     | 0.015<br>(0.030)    | 0.008<br>(0.042)   | 0.032<br>(0.040)     |
| <i>At age 32-34</i>                   | 0.057<br>(0.042)       | 0.061<br>(0.061)    | 0.067<br>(0.056)     | -0.054<br>(0.034)   | -0.020<br>(0.053)  | -0.066<br>(0.043)    |
| <i>At age 35-37</i>                   | -0.047<br>(0.067)      | -0.025<br>(0.095)   | -0.059<br>(0.082)    | -0.132**<br>(0.052) | -0.096<br>(0.084)  | -0.155***<br>(0.055) |
| <i>Paternal grandfather available</i> |                        |                     |                      |                     |                    |                      |
| <i>At age 23-25</i>                   | -0.007<br>(0.026)      | 0.005<br>(0.036)    | -0.006<br>(0.037)    | 0.039<br>(0.032)    | 0.025<br>(0.044)   | 0.049<br>(0.046)     |
| <i>At age 26-28</i>                   | -0.001<br>(0.030)      | 0.002<br>(0.041)    | 0.009<br>(0.042)     | 0.014<br>(0.033)    | 0.021<br>(0.046)   | 0.008<br>(0.045)     |
| <i>At age 29-31</i>                   | 0.013<br>(0.039)       | 0.056<br>(0.052)    | -0.036<br>(0.056)    | -0.011<br>(0.039)   | -0.005<br>(0.052)  | -0.017<br>(0.056)    |
| <i>At age 32-34</i>                   | -0.043<br>(0.055)      | 0.011<br>(0.073)    | -0.121<br>(0.085)    | -0.049<br>(0.052)   | -0.054<br>(0.073)  | -0.079<br>(0.065)    |
| <i>At age 35-37</i>                   | 0.014<br>(0.095)       | 0.003<br>(0.118)    | 0.005<br>(0.161)     | -0.102<br>(0.090)   | -0.135<br>(0.125)  | -0.122<br>(0.106)    |
| Observations                          | 15,043                 | 7,557               | 7,486                | 15,043              | 7,557              | 7,486                |
| Couples                               | 1,867                  | 935                 | 932                  | 1,867               | 935                | 932                  |

**Note.** Estimates of equation (3) from the Main Sample by extent of family ties. The sample is restricted to households with all members of the family of origin alive. See footnote to Table 6 for details on the controls included. Standard errors are clustered at the household level. See Section 4 for details. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 9: Preferences as opposed to lack of resources.

|   | <i>Family resources proxied by:</i> |                      |                      |                     |                    |                      |                              |                    |                      |
|---|-------------------------------------|----------------------|----------------------|---------------------|--------------------|----------------------|------------------------------|--------------------|----------------------|
|   | <b>Educational attainment</b>       |                      |                      | <b>House size</b>   |                    |                      | <b>Kindergarten coverage</b> |                    |                      |
|   | <i>Family Ties</i>                  |                      |                      | <i>Family Ties</i>  |                    |                      | <i>Family Ties</i>           |                    |                      |
|   | (1)<br><i>All</i>                   | (2)<br><i>Weak</i>   | (3)<br><i>Strong</i> | (4)<br><i>All</i>   | (5)<br><i>Weak</i> | (6)<br><i>Strong</i> | (7)<br><i>All</i>            | (8)<br><i>Weak</i> | (9)<br><i>Strong</i> |
| <i>Number of grandparents available in low wealth households</i>  |                                     |                      |                      |                     |                    |                      |                              |                    |                      |
| <i>At age 23-25</i>   | 0.003<br>(0.010)                    | 0.002<br>(0.013)     | 0.009<br>(0.014)     | -0.006<br>(0.011)   | -0.004<br>(0.014)  | -0.005<br>(0.015)    | 0.006<br>(0.010)             | 0.005<br>(0.014)   | 0.015<br>(0.014)     |
| <i>At age 26-28</i>   | 0.017*<br>(0.009)                   | 0.005<br>(0.013)     | 0.032**<br>(0.013)   | 0.009<br>(0.010)    | -0.003<br>(0.014)  | 0.027*<br>(0.014)    | 0.020**<br>(0.010)           | 0.008<br>(0.014)   | 0.035***<br>(0.013)  |
| <i>At age 29-31</i>   | 0.032***<br>(0.010)                 | 0.022<br>(0.014)     | 0.047***<br>(0.014)  | 0.027***<br>(0.010) | 0.007<br>(0.014)   | 0.055***<br>(0.014)  | 0.034***<br>(0.010)          | 0.021<br>(0.014)   | 0.050***<br>(0.014)  |
| <i>At age 32-34</i>   | 0.024**<br>(0.010)                  | 0.020<br>(0.015)     | 0.033**<br>(0.014)   | 0.020*<br>(0.010)   | 0.007<br>(0.015)   | 0.040***<br>(0.014)  | 0.032***<br>(0.010)          | 0.030**<br>(0.015) | 0.038***<br>(0.014)  |
| <i>At age 35-37</i>   | 0.021**<br>(0.011)                  | 0.013<br>(0.016)     | 0.033**<br>(0.015)   | 0.022*<br>(0.011)   | 0.008<br>(0.016)   | 0.039***<br>(0.015)  | 0.029***<br>(0.011)          | 0.025<br>(0.016)   | 0.036**<br>(0.015)   |
| <i>At age 38-40</i>   | 0.031***<br>(0.012)                 | 0.025<br>(0.017)     | 0.041***<br>(0.016)  | 0.032***<br>(0.012) | 0.025<br>(0.017)   | 0.043***<br>(0.016)  | 0.033***<br>(0.012)          | 0.026<br>(0.017)   | 0.045***<br>(0.016)  |
| <i>Number of grandparents available in high wealth households</i> |                                     |                      |                      |                     |                    |                      |                              |                    |                      |
| <i>At age 23-25</i>   | -0.015<br>(0.011)                   | -0.016<br>(0.016)    | -0.004<br>(0.014)    | 0.007<br>(0.010)    | 0.003<br>(0.014)   | 0.019<br>(0.014)     | -0.007<br>(0.010)            | -0.007<br>(0.014)  | -0.001<br>(0.014)    |
| <i>At age 26-28</i>   | -0.037***<br>(0.011)                | -0.049***<br>(0.015) | -0.018<br>(0.015)    | 0.004<br>(0.010)    | -0.010<br>(0.014)  | 0.021<br>(0.013)     | -0.013<br>(0.010)            | -0.021<br>(0.014)  | 0.003<br>(0.014)     |
| <i>At age 29-31</i>   | -0.006<br>(0.011)                   | -0.025<br>(0.016)    | 0.021<br>(0.015)     | 0.023**<br>(0.010)  | 0.015<br>(0.014)   | 0.036***<br>(0.014)  | 0.014<br>(0.010)             | 0.003<br>(0.014)   | 0.034**<br>(0.014)   |
| <i>At age 32-34</i>   | 0.021*<br>(0.012)                   | 0.014<br>(0.016)     | 0.034**<br>(0.016)   | 0.031***<br>(0.010) | 0.033**<br>(0.015) | 0.035**<br>(0.014)   | 0.019*<br>(0.011)            | 0.011<br>(0.015)   | 0.036**<br>(0.015)   |
| <i>At age 35-37</i>   | 0.038***<br>(0.012)                 | 0.027<br>(0.017)     | 0.054***<br>(0.017)  | 0.035***<br>(0.011) | 0.032*<br>(0.016)  | 0.041***<br>(0.015)  | 0.027**<br>(0.011)           | 0.013<br>(0.016)   | 0.050***<br>(0.015)  |
| <i>At age 38-40</i>   | 0.043***<br>(0.016)                 | 0.037*<br>(0.022)    | 0.049**<br>(0.021)   | 0.049***<br>(0.016) | 0.042*<br>(0.022)  | 0.054**<br>(0.021)   | 0.048***<br>(0.016)          | 0.041*<br>(0.022)  | 0.055***<br>(0.021)  |
| Observations  | 52,225                              | 25,357               | 26,868               | 52,225              | 25,357             | 26,868               | 52,225                       | 25,357             | 26,868               |
| Couples   | 6,014                               | 2,900                | 3,114                | 6,014               | 2,900              | 3,114                | 6,014                        | 2,900              | 3,114                |

**Note.** Estimates of equation (3) from the Main Sample by extent of family ties and household resources. The first panel considers the highest educational attainment of the head and the spouse in the couple, and classifies households above and below high school diploma. The central panel considers house size above or below its area average. The last panel splits households in areas where kindergarten coverage is above or below the national median. The specification controls for education of head and spouse, age of the male member in the couple, region of residence and regional female employment rate, number of grandparents alive, grandparents' age and education, number of siblings of couples members and a dummy for being the first born male in the family of origin. Standard errors are clustered at the household level. See Section 5 for details. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 10: Regressions using homemakers.

|   | <b>Couples with both<br/>grandmothers homemaker</b> |                    |                      | <b>Homemaker female<br/>in the couple</b> |                    |                      |
|---|---|--------------------|----------------------|---|--------------------|----------------------|
|   | <i>Family Ties</i>                                  |                    |                      | <i>Family Ties</i>                        |                    |                      |
|   | (1)<br><i>All</i>                                   | (2)<br><i>Weak</i> | (3)<br><i>Strong</i> | (4)<br><i>All</i>                         | (5)<br><i>Weak</i> | (6)<br><i>Strong</i> |
| <i>Number of grandparents available</i> |   |                    |                      |   |                    |                      |
| <i>At age 23-25</i>                     | 0.001<br>(0.016)                                    | 0.021<br>(0.022)   | -0.008<br>(0.021)    | 0.008<br>(0.022)                          | 0.026<br>(0.034)   | -0.009<br>(0.028)    |
| <i>At age 26-28</i>                     | 0.003<br>(0.015)                                    | 0.007<br>(0.022)   | 0.006<br>(0.020)     | 0.016<br>(0.021)                          | 0.031<br>(0.032)   | 0.006<br>(0.025)     |
| <i>At age 29-31</i>                     | 0.024<br>(0.015)                                    | 0.025<br>(0.023)   | 0.027<br>(0.021)     | 0.031<br>(0.021)                          | 0.037<br>(0.033)   | 0.027<br>(0.025)     |
| <i>At age 32-34</i>                     | 0.024<br>(0.016)                                    | 0.036<br>(0.023)   | 0.019<br>(0.022)     | 0.030<br>(0.022)                          | 0.044<br>(0.034)   | 0.022<br>(0.025)     |
| <i>At age 35-37</i>                     | 0.020<br>(0.017)                                    | 0.020<br>(0.025)   | 0.022<br>(0.023)     | 0.023<br>(0.023)                          | 0.036<br>(0.037)   | 0.013<br>(0.026)     |
| <i>At age 38-40</i>                     | 0.031*<br>(0.018)                                   | 0.039<br>(0.028)   | 0.025<br>(0.024)     | 0.023<br>(0.024)                          | 0.030<br>(0.038)   | 0.020<br>(0.027)     |
| Observations                            | 22,121  | 10,316             | 11,805               | 10,882                                    | 4,639              | 6,243                |
| Couples                                 | 2,547   | 1,167              | 1,380                | 1,290                                     | 536                | 754                  |

**Note.** Estimates of equation (3) from the Main Sample by extent of family ties and number of homemakers. The first panel is derived keeping only couples in which either of the grandmothers is homemaker. The central panel is derived considering couples in which both grandmothers are homemakers. The last panel is derived considering couples in which the female member of the couple is homemaker. The specification controls for education of head and spouse, age of the male member in the couple, region of residence and regional female employment rate, number of grandparents alive, grandparents' age and education, number of siblings of couples members and a dummy for being the first born male in the family of origin. Standard errors are clustered at the household level. See Section 5 for details. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

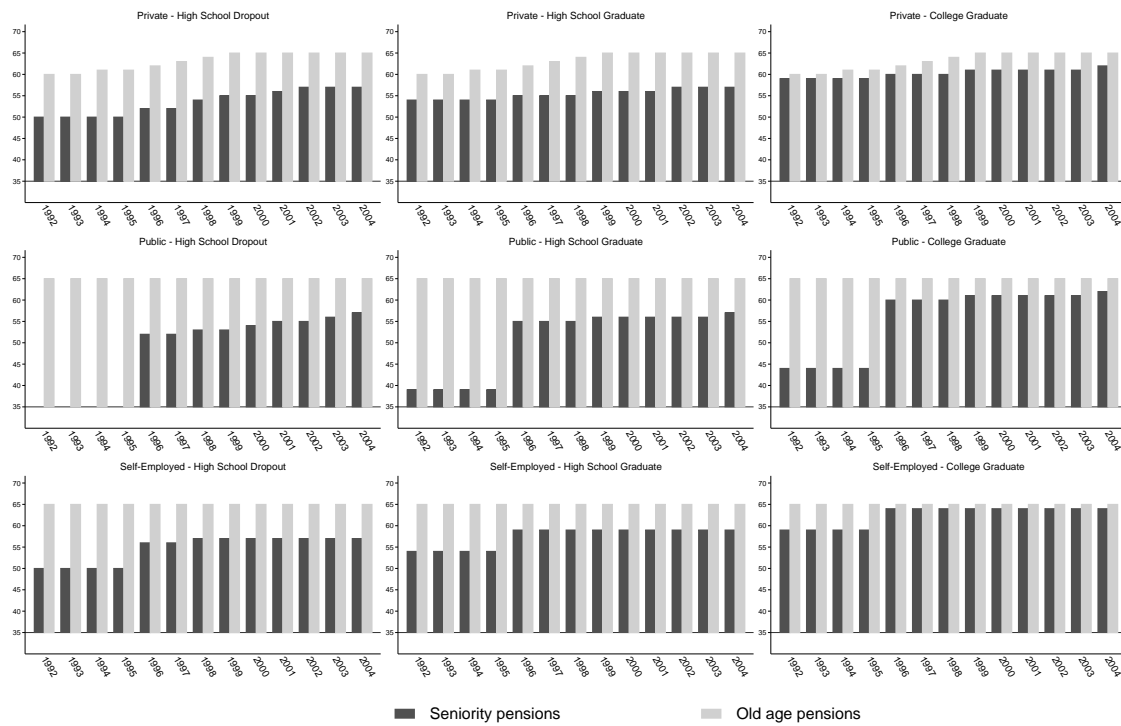
Table 11: Effects on labor force participation.

|   | Participation       |                    |                      | Participation After Five Years |                    |                      |
|---|---------------------|--------------------|----------------------|--------------------------------|--------------------|----------------------|
|   | <i>Family Ties</i>  |                    |                      | <i>Family Ties</i>             |                    |                      |
|   | (1)<br><i>All</i>   | (2)<br><i>Weak</i> | (3)<br><i>Strong</i> | (4)<br><i>All</i>              | (5)<br><i>Weak</i> | (6)<br><i>Strong</i> |
| <i>Number of grandparents available</i> |                     |                    |                      |                                |                    |                      |
| <i>At age 23-25</i>                     | 0.040***<br>(0.011) | 0.032**<br>(0.015) | 0.048***<br>(0.015)  | 0.019*<br>(0.011)              | 0.009<br>(0.014)   | 0.026*<br>(0.015)    |
| <i>At age 26-28</i>                     | 0.027***<br>(0.010) | 0.030**<br>(0.014) | 0.025*<br>(0.014)    | 0.017*<br>(0.010)              | 0.012<br>(0.013)   | 0.019<br>(0.014)     |
| <i>At age 29-31</i>                     | 0.029***<br>(0.010) | 0.027*<br>(0.014)  | 0.030**<br>(0.015)   | 0.018*<br>(0.010)              | 0.017<br>(0.014)   | 0.015<br>(0.014)     |
| <i>At age 32-34</i>                     | 0.025**<br>(0.011)  | 0.015<br>(0.015)   | 0.034**<br>(0.016)   | 0.005<br>(0.011)               | 0.003<br>(0.015)   | 0.004<br>(0.015)     |
| <i>At age 35-37</i>                     | 0.017<br>(0.012)    | 0.011<br>(0.017)   | 0.021<br>(0.017)     | -0.012<br>(0.012)              | -0.014<br>(0.017)  | -0.013<br>(0.017)    |
| <i>At age 38-40</i>                     | 0.003<br>(0.013)    | 0.004<br>(0.019)   | 0.000<br>(0.018)     | -0.020<br>(0.013)              | -0.020<br>(0.019)  | -0.022<br>(0.019)    |
| Observations                            | 52,225              | 25,357             | 26,868               | 52,225                         | 25,357             | 26,868               |
| Couples                                 | 6,014               | 2,900              | 3,114                | 6,014                          | 2,900              | 3,114                |

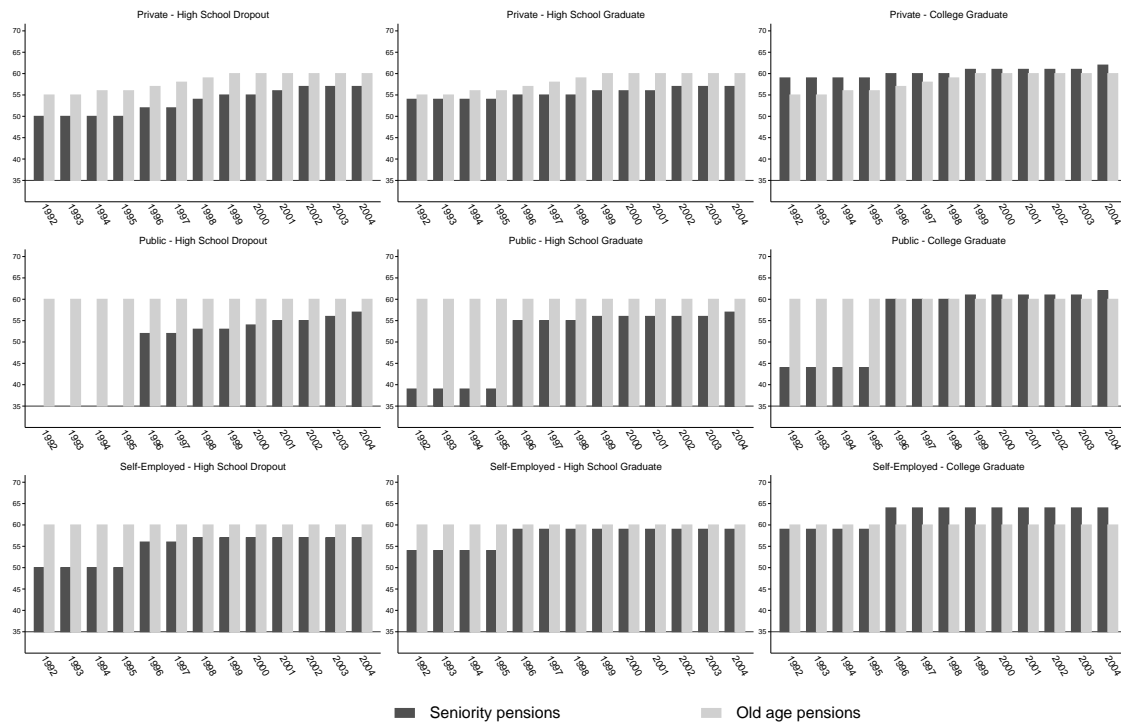
**Note.** Estimates of equation (3) from the Main Sample by extent of family ties using female employment dummy as outcome. The specification controls for education of head and spouse, age of the male member in the couple, region of residence and regional female employment rate, number of grandparents alive, grandparents' age and education, number of siblings of couple's members and a dummy for being the first born male in the family of origin. Standard errors are clustered at the household level. See Section 5 for details. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Figure 1: Minimum retirement age as implied by old age and seniority criteria.

### Males



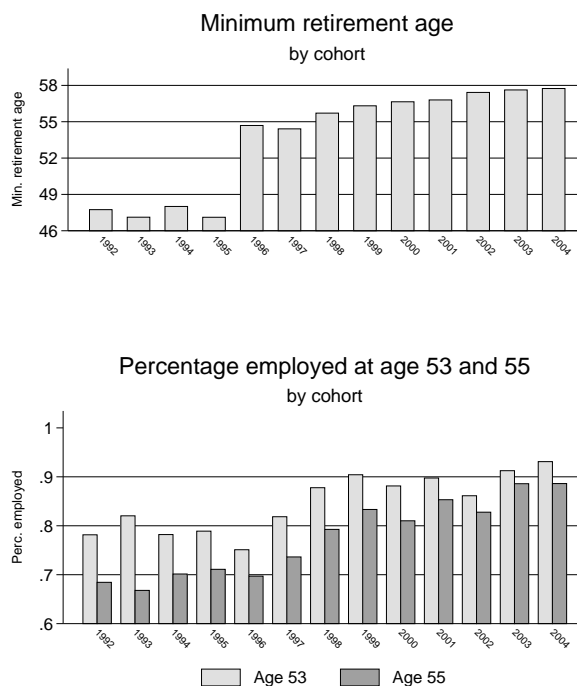
### Females



**Note.** The figures set out the comparison of consecutive cohorts of male (top panel) and female (bottom panel) individuals indexed by the year in which they reach age 50. A breakdown is considered by sector of activity and educational attainment. See Section 3 for details on computation.

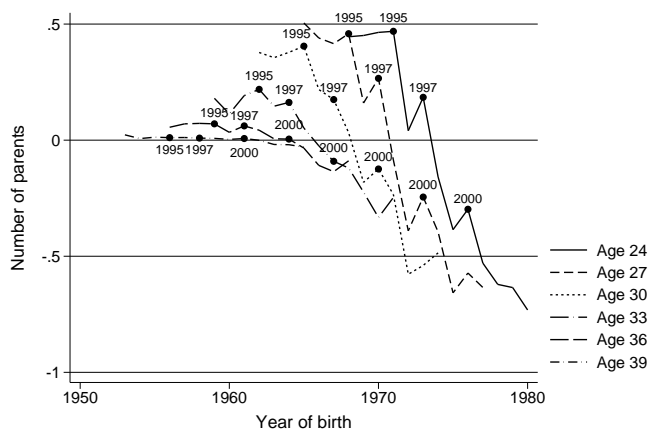


Figure 2: Policy changes to minimum retirement age.



**Note.** The figures set out the comparison of consecutive cohorts of male individuals indexed by the year in which they reach age 50. Reported in the top panel is minimum retirement age by cohort averaged across individuals in the Main Sample. For the same individuals, the bottom panel reports the percentage at work at age 53 and age 55. See Section 3 for details on computation.

Figure 3: Average number of grandparents available.

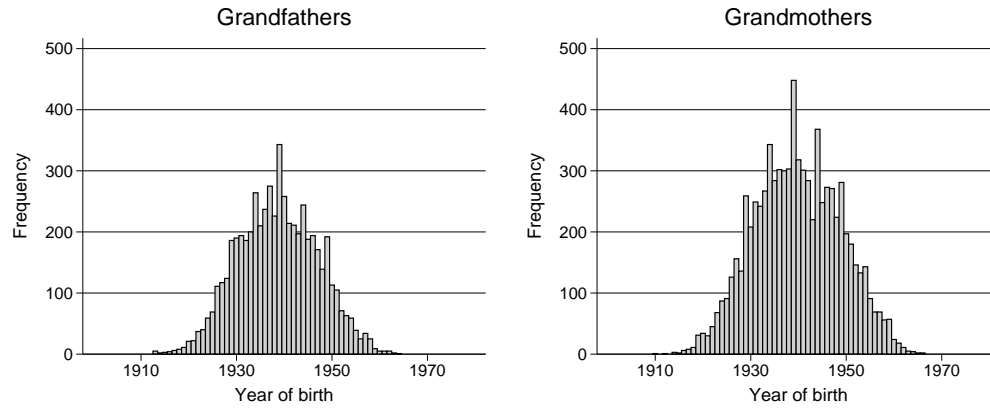


**Note.** The horizontal axis refers to the cohort of birth of the female member of the couple in the Main Sample. The vertical axis reports the average residualized total number of parents and parents in law at different ages of the female member. Residuals are computed with respect to age and education of parents. See Section 3 for details.

Appendix  
(for on-line publication)

# A Appendix

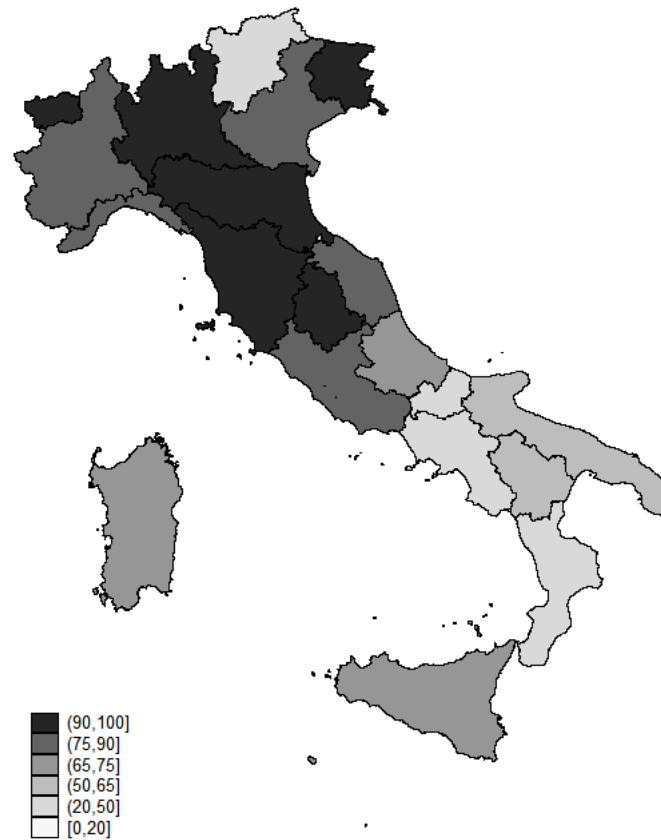
Figure A.1: Year of birth distribution of members of the family of origin (Main Sample).



**Note.** The figures report the distributions of cohorts of grandfathers (left panel) and grandmothers (right panel) as computed from the Main Sample.

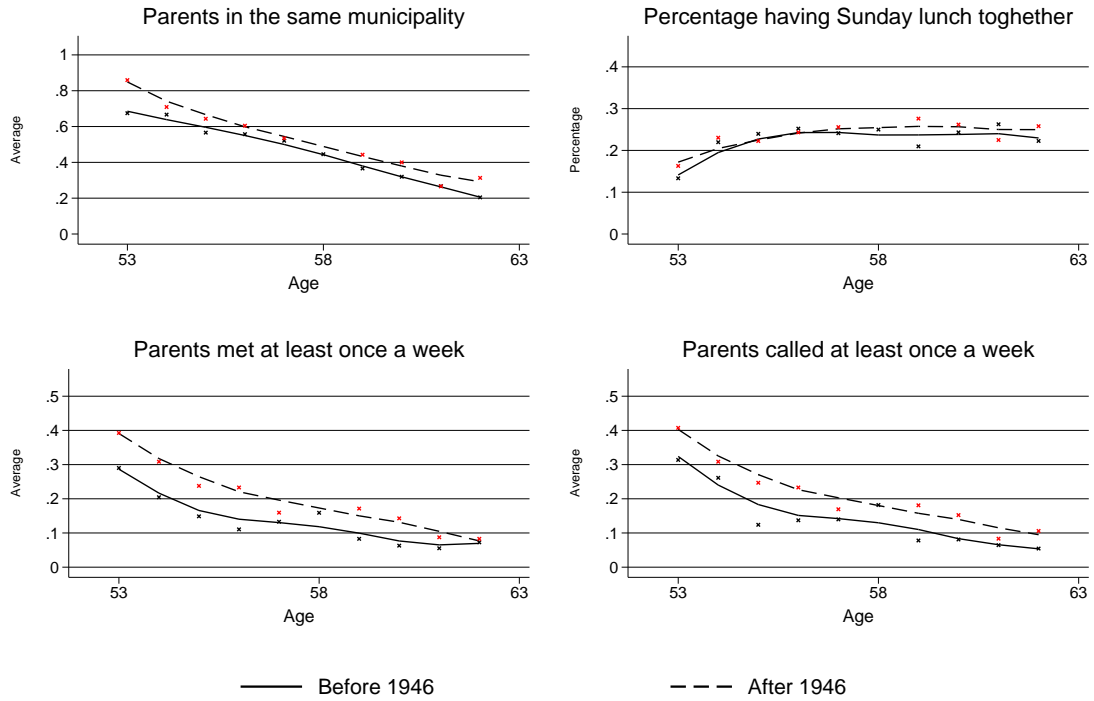


Figure A.3: Kindergarten coverage in 2009 across Italian regions.



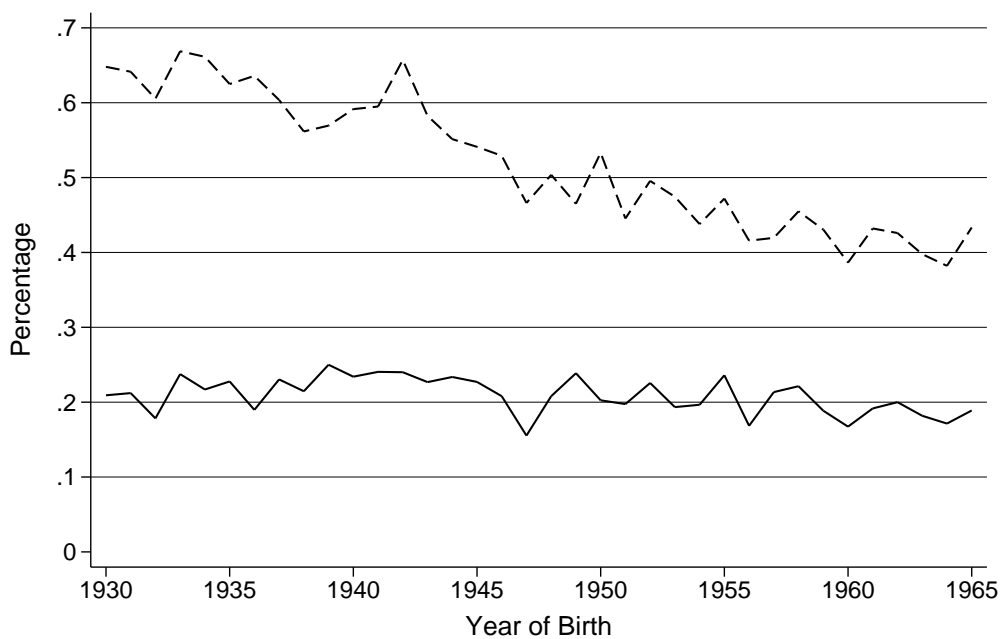
**Note.** The figure reports the geographical distribution of kindergarten coverage in 2009, measured as the proportion of municipalities in the region providing public child-care facilities.

Figure A.4: Effects of pension reforms on family ties.



**Note.** The horizontal axis refers to the age of grandparents. The vertical axis reports the proportion of grandparents living in the same municipality of their children (top left panel); having Sunday lunch with regularly with other members of the family (top right panel), meeting at least once a week with their children (bottom left panel) and calling their children at least once a week (bottom right panel). Figures are obtained by pooling observations from the 1998, 2003 and 2009 waves of the *Family and Social Subjects* survey, see Section 3 for details. Red dots mark post-1946 cohorts, black dots mark pre-1946 cohorts. Solid and dashed lines are fitted values of non-parametric regressions run over pre and post 1946 cohorts respectively.

Figure A.5: Extent of misclassification in the definition of homemakers - columns (1) to (6) of Table 10.



**Note.** We use data on female respondents, and group them depending on their year of birth which is reported on the horizontal axis. We keep only mothers in 2009, and use retrospective information to select those who were not at work when the first child was aged 10 to 14. The dashed line in the figure reports the incidence of this group as a fraction of total population in the cohort. We do so to replicate the definition of homemaker employed in columns (1) to (6) of Table 10, which is derived from the question: ‘Think of when you were 14. What was the working status of your mother and your father?’. We define as homemakers those who self-report continuous inactivity in their life at the time of interview. The continuous line in the figure is the percentage of homemakers incorrectly classified using their status when the child was aged 10 to 14.

**This working paper has been produced by  
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