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The Matrilineal Advantage in European  
Grand Parenting.**

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## ABSTRACT

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# **With a Little Help from My Mother. The Matrilineal Advantage in European Grand Parenting.\***

This study documents the matrilineal advantage in grandparent – grandchildren relationships in Europe, using data on 20 European countries and Israel from the Survey of Health, Ageing and Retirement (SHARE). We show that maternal grandparents look after grandchildren and provide financial or material gifts to children more than paternal grandparents do. In exchange, daughters help their parents with personal care, household tasks and paperwork more than sons do. The matrilineal advantage is stronger for grandmothers than for grandfathers, and stronger in the more conservative societies of Southern Europe, where gender inequality is higher and trust in others is lower.

**JEL Classification:** J12, J13

**Keywords:** childcare, Europe, family

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## Introduction

There is an increasing interest by economists on the inter-generational transmission of preferences, beliefs and economic outcomes, including education, occupation and earnings (see for instance Bisin and Verdier, 2001; Kroeger and Thompson, 2016; Long and Ferrie, 2018; Olivetti et al, 2020). This transmission is likely to depend on the strength of inter-generational ties, which involve parents, children and grandchildren.

The quality and intensity of the relationship between grandparents and grandchildren may vary with the characteristics of the intermediate generation (grandparents' children). Recent US evidence shows, for instance, that ties involving grandchildren and maternal grandparents are closer, more meaningful and more satisfying than those relating to the paternal side (Chan and Elder, 2000), suggesting the presence of a *matrilineal advantage*, and that the maternal link may be a key channel for the transmission of values across generations.<sup>1</sup>

In this paper, we investigate whether a matrilineal advantage in grandparent – grandchildren relationships is present in the European context, using data on 20 European countries and Israel from the Survey of Health, Ageing and Retirement (SHARE). Europe is interesting because of the observed variety of family and gender values (Aboim, 2010), the different patterns of division of labor by gender (Buhmann et al, 2010) and the relative importance of public childcare (Janta, 2014). There are important variations in the intensity and frequency of the care provided by grandparents. In France, Denmark, Sweden and the

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<sup>1</sup> Pushkar et al. (2014) found that older parents of only daughters have more intimate family relations than parents of only sons. See also Kahana & Kahana, 1970; Kivett, 1991; Matthews & Sprey, 1985; Somary & Stricker, 1998.

Netherlands, between 50% and 60% of grandparents provide some childcare compared with just 40% in the Southern European countries. However, regular and intensive grandchild care is more common in Southern Europe, with 20% of grandparents in Italy providing almost daily childcare compared with just 2% of grandparents in the Netherlands (Glaser et al, 2010).

For convenience, we shall denote hereafter grandparents as G1, grandparents' children as G2 and grandparents' grandchildren as G3. For each grandparents' household, we observe in SHARE the intensity of grandparents' childcare of grandchildren, the provision of financial or material gifts from G1 to G2 (and from G2 to G1) and the supply of G2's informal care to G1. Using the variation in the gender of children G2 within each grandparents' household and controlling for household observed and unobserved characteristics, as well as for observable G2's characteristics, we show that the matrilineal advantage is a common feature of inter-generational relations in European countries.

Previous sociological research has explained this advantage with women's kin keeping, or the facilitation of contact among kin (see Hagestad, 1985). We argue instead that an important source of the observed matrilineal advantage is that, while maternal grandparents favor daughters in their provision of childcare and financial gifts, daughters provide more intensive care of parents than sons do. This exchange may have strategic motives, with grandparents investing more time and money in the care of their daughters and their daughters'

children in the reasonable expectation of receiving their daughters' care when in older age.<sup>2</sup>

We also show that the matrilineal advantage is stronger for grandmothers in the provision of childcare services, and for grandfathers in the provision of financial or material gifts. The intensity of this advantage is likely to be higher in the countries where the traditional division of labor – with the husband working and the wife specializing in housework and care of children and parents – is stronger. In these countries, due to task specialization, daughters are more likely than sons to care for parents and receive in exchange parental support for the care of their children.

Southern European societies (Greece, Italy, Spain and Portugal) are characterized by a lower index of gender equality, a more conservative view of the role of women,<sup>3</sup> and a lower level of trust in others. We show that the matrilineal advantage in the inter-generational exchange of services (childcare of grandchildren and care of parents) is stronger in these countries than in rest of Europe, where instead the matrilineal advantage based on financial transfers is more important.

Our paper is related to different strands of economic literature. The first strand is the inter-generational transmission of values, beliefs and outcomes.<sup>4</sup> Values such as trust and respect for others have been shown

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<sup>2</sup> Daughters, on the other hand, may provide care also in the expectation of future financial gifts (or bequests). Manacorda and Moretti, 2006, and Horioka et al., 2017, discuss the strategic behavior of parents and adult children in the decision to cohabitate.

<sup>3</sup> Catholicism, which prevails in Southern Europe, places higher importance on the family and leads to lower trust of strangers, which hampers market exchanges in the provision of child and elderly care (Arruñada 2010).

<sup>4</sup> These outcomes include fertility (Fernandez and Fogli 2006; Booth and Kee 2009; Salari 2018), religion (Patacchini and Zenou 2016), smoking habits (Loureiro et al., 2010;

to be an important determinant of economic development (Zak and Knack 2001; Algan and Cahuc, 2010; Tabellini 2010; Albanese et al., 2016). An aspect of this transmission is the persistence of educational outcomes across generations, such as the one involving grandmothers and their granddaughters (Kroeger and Thompson, 2016)<sup>5</sup>.

Another strand is the literature on identity (Akerlof and Kranton 2000). Gender identity can determine economic behavior and the division of labor within a household, and can be transmitted from mother / grandmother to child. Working women can be role models that shape their children's identity and influence also mate selection (see Fernandez et al. 2004; Fernandez and Fogli 2006; Kawaguchi and Miyazaki 2009; Farre and Vella 2013; Johnston et al. 2014). The sons of working mothers share more housework with their spouses after marriage (Yamamura and Tsutsui, 2021), and women's working style is related to the preferences of mothers-in-law.<sup>6</sup>

The remainder of the paper is organized as follows. Section 1 introduces the data, Section 2 discusses the empirical approach and Section 3 presents the results. Conclusions follow.

## **1. The data**

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Rodríguez-Planas and Sanz-de-Galdeano 2019); obesity (Stoklosa et al., 2018) and mental health (Johnston et al., 2013).

<sup>5</sup> Casey and Dustmann, 2008, find for immigrants a strong positive relation between parents' and children's language fluency, which improves labor market outcomes. The level of parental education is shown to be positively associated with sons' cognitive and non-cognitive skills, as well as their health (Lundborg et al., 2018).

<sup>6</sup> Women who were exposed to a larger number of working mothers during adolescence are less likely to feel that work interferes with family responsibilities. This perception, in turn, is important for whether they work when they have children (Olivetti et al., 2020). For instance, Bredtmann et al, 2020, find that gender role preference of foreign-born mothers-in-law can explain labor supply of native US women, indicating that cultural values can be transmitted across cultural boundaries.

We draw our data from the Survey on Health, Ageing and Retirement (SHARE), a multi-disciplinary and cross-national European dataset containing current and retrospective information on labor market activity, retirement, health and socio-economic status of more than 25,000 individuals aged 50 or older. We use waves 1, 2 and 4 to 7 of the survey, covering the period 2004 to 2017 and 20 European countries plus Israel.<sup>7</sup>

For each interviewed individual or couple, SHARE has information on children and grandchildren. In the first two waves, only the first four children are considered. In the remaining waves, all children are taken into account, but we only retain the first six (households with at most six children cover about 98 percent of the sample). Since the questions about children and grandchildren are answered by the family respondent on behalf of the couple, we treat each couple of grandparents as a single observation by averaging individual characteristics (such as age or education) within the couple.

For each grandparent, we only retain children who have their own children. Interviewed grandparents with grandchildren are asked whether, during the time since the last interview, they have regularly or occasionally looked after their grandchildren without the presence of parents. Those who answer positively are asked both about the frequency of care (less than monthly, almost every month, and almost every week, almost daily) and about the number of hours of care spent looking after all their grandchildren in a typical month during the past year. This frequency comprises the care provided to all children of the

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<sup>7</sup> We exclude wave 3, or SHARELIFE, which collects mainly retrospective information.

same parent: if a couple G1 has two children G2, and each G2 has two children G3, SHARE measures G1's childcare of all G3 for each G2.

Since information on hours is only available for the first two waves, we focus hereafter on the frequency of care and classify it as follows: thirty days for almost daily, four days for almost every week, one day for almost every month, and half a day for less than monthly. Figure 1 shows the average intensity of grandparents' childcare of grandchildren in the twenty European countries in our sample and Israel. This intensity is higher than four days per months in Italy and Poland and lower than one day per month in Denmark and Sweden.

Respondents are also asked whether they received during the past year help with personal care, household tasks and paperwork from any family member from outside the household (including children), friends and neighbors. Those who received such help can indicate three persons providing it. The intensity of help is also measured in days per month. Reciprocal help between parents and grown up children involves not only the provision of services but also the exchange of financial or material gifts (excluding share housing or share food). Respondents are asked to indicate whether they have provided (or received) during the past year these gifts to any person outside the household. In the affirmative case, they are prompted to indicate three recipients or authors of these gifts.

In our working sample, we retain individuals G1 aged 50 to 90 with children G2 who are at most aged 50 and at least 18 years younger than their parents are. There are 38,908 grandparents, with an average of 1.98 children and 4.48 grandchildren. Of the total 74,126 observations, 15.5 percent are repeated observations of (G1, G2) pairs over time. Table 1

shows the summary statistics for the variables used in the paper. The (weighted) average number of days spent in the past year by grandparents looking after their grandchildren without the presence of parents is 2.783. On the other hand, children living outside the household spent on average close to a day per month (0.886) helping their parents. The percentage of parents who, during the past year, gave to or received from their children financial or material gifts of 250 euro or more is 11.6 and 2.0 percent respectively.

While the share of female G2 children is slightly over half (54.9%), the share of female grandparents is 65.9%, reflecting the fact that the survival probability is larger for females than for males. Average grandparents' age and years of education are 71.03 and 8.11 respectively. The share of retired and married grandparents is 63.3 and 46.1% respectively. Average household income is about 26.8 thousand euro. The percentage of females who are family respondents is 64.9% and the subjective "probability of living x additional of years" is 48.2%.<sup>8</sup>

Turning to children (G2), average age is 39.3 and the average number of their children (G3) is 1.92. Close to 10% do not live with a partner, 59.6% are employed, 49.1% have no higher education or vocational training (after secondary school) and 73.5% have moved out of G1's household since at least 10 years. Finally, 52.6% of their youngest children are aged at most 10.

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<sup>8</sup> This probability is computed as follows: respondents answer the question: "What are the chances that you will live to be age x or more?", where x is 75 for those aged less than 65, 80 for those aged 65 to 69, 85 for those aged 70-74, 90 for those aged 75 to 79, 95 for those aged 80 to 84, 100 for those aged 85 to 94, 105 for those aged 95 to 99, 110 for those aged 100 to 104 and 120 for those aged 105 or older.

## 2. The Empirical Approach

Figure 2 illustrates the web of exchanges involving the three generations G1 to G3. The dotted box on the right of the figure indicates the flow of services and resources occurring within the three-generation family. The solid arrows describe the flow of services (childcare, children's help) and the dashed arrows show the exchange of financial or material gifts.

To the left of the box, we place market provided childcare (e.g. baby-sitting) and elderly care. The choice between family provided and market provided care depends on the relative costs and benefits. In the presence of a matrilineal advantage, the ties involving maternal grandparents and their grandchildren are closer and more intense than those involving paternal grandparents.

To provide evidence about this advantage, we compare G1's childcare of G3 when G2 is female with childcare when G2 is male, and establish that it is present when the former is higher than the latter, conditional on G1 and G2 observable characteristics. Stronger ties between parents and daughters do not show up only in child caring, but could also involve financial transfers from the former to the latter.

The presence of a matrilineal advantage could be due to G2's unobservables. For instance, the daughter may show higher empathy and affection toward her parents than the son, or, as suggested by Falk et al, 2018, she may show more positive reciprocity and altruism. An alternative explanation is that parents invest more time and resources in their daughters than in their sons because the former currently provides them with more informal care than the latter. This current behavior constitutes a good predictor of the likelihood of receiving such care in the future when the need arises.

To discriminate between these two explanations, we compare informal care of G1 by G2 when G2 have children and when they have no children. If the explanation is altruism and affection, care should not vary across these two groups. On the other hand, if the explanation is the exchange of services, G2's informal care should be stronger when grandchildren are present.

Let  $Y$  be either the intensity of grandparents' childcare of grandchildren or the probability that parents G1 give their children G2 financial transfers, and let "Daughter" and  $X$  be a dummy equal to one when the child G2 is a daughter and zero otherwise, and a vector of covariates respectively. In the presence of matrilineal advantage, we expect to find that  $E[Y \mid \text{Daughter}=1, X] > E[Y \mid \text{Daughter}=0, X]$ .

We estimate the following model

$$Y_{ijt} = \beta_0 + \beta_1 \text{Daughter}_{ijt} + \beta_2 X_{jt} + \beta_3 X_{it} + \gamma_j + \gamma_t + \varepsilon_{ijt} \quad (1)$$

where the sub-scripts  $i, j$  and  $t$  are for the child G2 (and her/his children G3), the grandparent G1 and time,  $X_{jt}$  is a vector of time varying grandparent's covariates,  $X_{it}$  a vector of G2's observable characteristics,  $\gamma_j$  is a time invariant household fixed effect and  $\gamma_t$  is an aggregate time effect. In the presence of matrilineal advantage, parameter  $\beta_1$  is positive.

The gender of G2 is not randomly allocated across G1 families, but depends on "endogenous stopping rules", according to which some parents may continue having children until they have one of the desired sex (Dahl and Moretti, 2008). We control for these rules by using G1's family fixed effects. Conditional on these effects, we treat the dummy "Daughter" as exogenous.

This specification implies that our estimates are driven by “within-household” variations, which occur only in households with at least two children with a different gender. In practice, the “Daughter” effect is identified by 27,718 observations out of the original 74,126. We cluster standard errors at the household level. The vector  $X_{jt}$  includes the grandparent’s age (average age in the case of a couple of grandparents), age squared, log household income, whether the grandparent is retired or married, household size, self - reported poor health and the distance from the child in kilometers.

We recognize that some of these covariates are endogenous because of reverse causality or because they are decided jointly with childcare. For instance, caring for grandchildren can induce retirement, and distance can be chosen in order to look after grandchildren (or to be looked after by children). If grandparents choose to live closer to their daughters in order to better look after their grandchildren, the coefficient of interest  $\beta_1$  is biased, with the size of the bias depending on the correlation between D and the endogenous covariate.<sup>9</sup> We therefore estimate (1) using two different specifications, a parsimonious one which only includes G1’s age and age squared as grandparents controls and a less parsimonious one which includes the other controls in  $X_{jt}$ . If the estimated coefficient  $\beta_1$  does not vary much across specifications, we conclude that the bias induced by endogenous covariates can be ignored.

The vector  $X_{it}$  includes G2’s age, the number of children, birth order (1 for firstborn) and dummies for employment, educational attainment (1:

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<sup>9</sup> Our data do not suggest that daughters are more likely to live close to their parents than sons. We find that 10.1% of daughters and 10.6% of sons live in the same household or building, and 45.9% of daughters and 45.5% of sons live within 3 kilometers from their parents.

has higher education; 0: otherwise), not living with a partner, having the youngest child aged at most 10 and having moved out of G1's household at least since 10 years.

We recognize that the partner's parents can also provide childcare of G2's children. Let the intensity of this childcare be OY, which we do not observe in the data. The omission of OY from (1) raises the question as to whether we may empirically detect matrilineal advantage when there is none. Reassuringly, this is not the case, because the omitted variable bias depends on the correlation between D and OY, which is zero when matrilineal advantage is absent.<sup>10</sup>

### 3. Results

#### 3.1 Baseline results

Table 2 reports our baseline estimates, where the dependent variable is the intensity of grandparents' childcare of grandchildren. The table is organized in three columns: the parsimonious specification in column (1), the less parsimonious one with  $X_{jt}$  in column (2) and a richer specification that also adds child-specific controls ( $X_{it}$ ) in column (3). All specifications include a constant, time and household fixed effects.

Independently of the selected specification, we find that grandparents' childcare - measured as days per month - is higher when the child G2 is female, consistent with the matrilineal advantage hypothesis. This advantage is sizeable, about 10.5 percent with respect to mean childcare (2.783 days) in columns (1) and (2). The estimated coefficient associated with child G2's gender in column (1) is very similar to the one in column

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<sup>10</sup> See the Appendix for further discussion.

(2), dispelling concerns that adding endogenous grandparents' controls could significantly bias it.

The estimated positive value of  $\beta_1$  could be partly due to child-specific characteristics. For instance, if employed daughters require more childcare but have a lower probability of employment than sons do, omitting employment status will bias  $\beta_1$  downwards. Column (3) shows that including the controls in vector  $X_{it}$  increases the estimated value of  $\beta_1$  from 0.292 to 0.325.

We find that grandparents' childcare is higher when the respondent is female, retired or lives near to her child G2. Although adequate care should be used when interpreting the effects of these covariates, because of their potential endogeneity, they suggest that retired grandparents are more likely to spend time with their grandchildren because of the lower opportunity cost of time, and that the costs of caring for grandchildren increase when their distance from grandparents is higher. There is also evidence that childcare is higher when adult children G2 are younger and grandchildren are small and more in need of childcare; when G2 are not living with a partner and when their birth order is lower, possibly indicating that grandparents invest more in their relationship with their older children.

A potential concern is that, when the grandfather is the family respondent and answers questions for the couple, including the grandmother, he might have a poor view of actual child-caring activities, which are often performed by his partner. We therefore estimate the specification in column (1) of Table 2 separately for female and male respondents. Each group includes couples and single grandparents. As shown in Table 3, the estimated value of  $\beta_1$  is very similar when the

respondent is the grandmother or the grandfather, suggesting that the results in Table 2 are not driven by a poor perception of child caring.

The presence of a matrilineal advantage is not limited to the supply of services such as childcare, but extends to the provision of financial or material gifts to children G2. As shown in Table 4, daughters are 1.3-1.8 percent more likely than sons to receive these gifts from their parents. There is also evidence that financial gifts are less likely when the G1 household has difficulties in making ends meet, when the child G2 is younger, not living with a family and firstborn.<sup>11</sup>

As argued in the previous section, a reason why grandparents spend more time looking after their daughters' than their sons' grandchildren, and are more likely to provide financial gifts to daughters than sons, is that the former spend more time than the latter caring about their parents. In support of this view, Table 5 reports the estimates of alternative specifications of Equation (1) when the dependent variable is the number of days in a month spend by children G2 helping their parents G1 with their personal care, household tasks or paperwork.

The table shows that daughters provide care much more than sons. Relative to mean days of help per month, the former help their parents 37.6 percent more than the latter (0.333/0.886). This large effect changes relatively little between columns (1) and (2) of the table, confirming that grandparents' covariates are poorly correlated with the child's gender. Adding child covariates reduces the estimate of parameter  $\beta_1$  somewhat more, from 0.333 to 0.262, and we find that older children, who are

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<sup>11</sup> Compared to Table 2, we find that there is no statistically significant association between the probability of giving financial gifts and retirement status. If anything, the negative coefficient associated with retirement suggests that grandparents are less able to provide gifts because of lower income.

firstborn, employed and live with a partner, help their parents less than other children. The finding that daughters help parents more than sons is confirmed when we consider separately female and male respondents (see columns (3) and (4) of Table 3).

More help from daughters, however, appears to be restricted to help in kind. When we consider financial transfers from children G2 to parents G1, we find that the coefficient associated with the dummy “Daughter” is negative and imprecisely estimated – see Table 6. This result may be due to the fact that daughters are less likely to work than sons, especially in the South of Europe, and therefore to have independent financial resources. Therefore, they substitute transfers with informal care.

An alternative reason why we observe matrilineal advantage is that daughters differ from sons because of un-observables such as empathy and altruism. Grandparents are more likely to visit the grandchildren of altruistic daughters, and to receive from them more informal care. If this is the case, we would expect that daughters are more willing to care for parents than sons, independently of whether they have children or not. However, as shown in Table 7, there is no statistically significant effect of being a daughter on the intensity of care of parents when the daughter has no children. We interpret this result as supportive of the view that matrilineal advantage is motivated by the exchange of services across generations.

The strength of the matrilineal advantage could vary with the average age of children G2 and therefore of their grandchildren. Our data suggest that, on average, children younger than 40 receive more help from their parents, both in kind and financially, than older children (days of childcare: 2.999 for the former and 2.412 for the latter;

probability of a financial gift from parents: 12.1 percent for the former and 10.6 percent for the latter).<sup>12</sup> In addition, younger children are less likely to help parents, both in kind and financially, than older children (days of care: 0.965 for the former and 0.763 for the latter; probability of gift to parents: 1.9 percent for the former and 2.2 for the latter). As shown in Table 8, there is evidence of matrilineal advantage in the provision of grandparents' childcare only for children aged below 40. On the other hand, the relevance of this advantage does not vary by age group when financial gifts or children's care of parents are considered.

### *3.2 Single grandmothers and grandfathers*

Is the matrilineal advantage that we observe in the data driven by the grandmother or by the grandfather? To examine this question, we need to consider single grandparents and exclude couples, because in the case of couples the questions in SHARE about grandparents' childcare and financial gifts to children are answered by family respondents for the both members of the couple. As shown in Table 9, single grandmothers do on average more childcare of their grandchildren and receive more care from their children than single grandfathers, although the large standard deviations suggest that these differences are unlikely to be statistically significant.

On the other hand, and compared with grandmothers, single grandfathers are more likely to give financial or material gifts to their children. Since single grandmothers have on average substantially lower income than single grandfathers (23,637 euro versus 41,893 euro), the table suggests that grandfathers may substitute the provision of services

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<sup>12</sup> Compared to Table 2, we omit children G2 with missing age from the computation of age-specific statistics.

such as childcare with financial help, and that grandmothers do the opposite. On average, grandfathers receive less care from children than grandmothers, and are less likely to receive financial gifts. In addition, a comparison of daughters and sons indicates that the former receive more help (both financial and in kind) from parents and provide more care to their parents than the latter.

We compare the importance of matrilineal advantage for single grandfathers and grandmothers by estimating an empirical specification that allows the effect of the dummy “Daughter” to vary according to the gender of the grandparent G1. Results are shown in Table 10, where columns (1) and (2) correspond to the solid arrows and columns (3) and (4) to the dashed arrows in Figure 2. Column (1) of the table shows evidence of a statistically significant matrilineal advantage in the childcare of grandchildren only for single grandmothers: the coefficient associated with the interaction of “Daughter” with the grandparent’s gender is equal to 0.239 (statistically significant at the 1 percent level of confidence) for grandmothers and to 0.122 (not statistically significant) for grandfathers.<sup>13</sup>

Turning to column (2), there is suggestive evidence that, when help in kind by children to parents is concerned, the matrilineal advantage is stronger for grandmothers than for grandfathers (the coefficient associated with the interaction of “Daughter” with the grandparent’s gender is equal to 0.542 for grandmothers and to 0.347 for grandfathers, statistically significant in both cases, but with difference not statistically different from zero). When financial or material gifts are considered, this

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<sup>13</sup> Due to the imprecise estimates for grandfathers, the difference across genders is not statistically different from zero (p-value: 0.470).

advantage is larger instead for grandfathers than for grandmothers (the relevant coefficient is equal to 0.029 for the former and to 0.018 for the latter, statistically significant in both cases, but with difference not statistically different from zero). These results are consistent with those in Table 9 and imply that the relation between mother G1 and daughter G2 is stronger than the one between father G1 and daughter G2 for the provision of services and care, but weaker when the exchange of financial and material gifts are concerned.

### *3.3 Robustnesses*

In this sub-section, we consider two robustness exercises. First, we replicate Table 2 using weighted least squares and the weights provided by SHARE. As shown in Table A1 in the Appendix, our baseline results are confirmed. Second, we define cells as combinations of individuals G1, children G2 and number of grandchildren G3, and retain for each cell only the first observation. By so doing, the sample is reduced from 74,126 to 64,947 observations. As shown in Table A2 in the Appendix, our key results are unchanged.

### *3.4 Southern Europe versus the rest of Europe*

Does the matrilineal advantage vary across European countries? To investigate this, we estimate specification (1) in Table 2, which includes only age and age squared as grandparents' controls, by interacting the key parameter  $\beta_1$  with country dummies. Figures 3, 4 and 5 show the country-specific estimates of  $\beta_1$  for grandparents' childcare, children's help of their parents, and for grandparents' financial or material gifts to their children.

Figure 3 indicates that, for grandparents' childcare, the size of the matrilineal advantage is highest in Italy, Hungary, Greece and Spain,

and turns into a disadvantage in Austria, Luxemburg and Poland. Figure 4 considers the care provided by children G2 to parents G1 and confirms that  $\beta_1$  is highest in Southern European countries (Greece, Italy, Spain and Portugal) and Ireland, and turns negative in Scandinavian countries such as Estonia and Denmark. The ranking of  $\beta_1$  changes drastically when we consider the provision of material or financial gifts to children G2, with Denmark at the top and Italy and Portugal at the bottom (see Figure 5).

These figures suggest that the matrilineal advantage in the relationship across generations takes different forms across European countries: while in Southern Europe it shows mainly in grandparents' childcare and the informal care of parents by children G2, in the rest of Europe it shows also in grandparents' supply of financial and material gifts to their children. The differences between the South and the rest of Europe are confirmed in Table 11, which presents the estimates of the baseline model (column (1) of Table 2) augmented with the interaction of the dummy "Daughter" with a dummy for Southern European countries. This interaction is positive and statistically significant for both grandparents' childcare and children' care of parents, and negative and statistically significant for grandparents' financial gifts to children. For this variable, we find evidence of a matrilineal advantage only in the rest of Europe.

A candidate explanation of the relative strength of the matrilineal advantage in the provision of services (grandparents' childcare, children's help in kind) in the countries of Southern Europe is that in these countries the traditional view of women and their role in the family is more prevalent than in the rest of Europe. In the traditional family,

due to the division of labor, the husband works and the wife does the housework and child rearing.<sup>14</sup> Due to task specialization, grandmothers are more likely to develop strong ties with mothers, which favors the exchange of services.

We measure the importance of the traditional family with two indicators: gender equality and the degree of trust in others. In societies where a traditional view of the family prevails, gender equality is less developed and so is the provision of early public childcare. We measure gender equality with the 2005 Gender Equality Index developed by the European Institute for Gender Equality, 2017.<sup>15</sup> This index ranges from 0.468 to 0.788 and is equal to 0.520 in the South of Europe and to 0.611 in the rest of Europe.

The degree of trust in others is known to be a key determinant for the development of market transactions and investment (Zak and Knack 2001; Algan and Cahuc, 2010; Tabellini 2010). In traditional and closed societies, people trust family and relatives but trust less others (Putnam et al., 1993). In these societies, lack of trust is an obstacle to developing market provided childcare services, which are replaced by exchanges of services within the family. As shown by Alesina and Giuliano, 2010, low trust is positively correlated with strong family ties, which in turn are positively correlated with home production and lower labour force participation of women. We measure trust in others using the replies to the question in SHARE... "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?". Answers range from zero (low) to 10 (high) trust. Average

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<sup>14</sup> Labor force participation by women aged 15 to 64 in 2019 was close to 7 percentage points lower in Southern than in the rest of Europe (63.5 versus 71 percent).

<sup>15</sup> The index is missing for Switzerland and Israel.

trust ranges from 4.560 to 7.257 and is equal to 5.083 in the South of Europe and to 5.659 in the rest of Europe.

We combine these indicators using principal component analysis to obtain an index of traditionalism,<sup>16</sup> and regress the country-specific estimates of  $\beta_1$  associated with grandparents' childcare on this index and its square, using the standard errors of the estimates as weights. As shown in Table 12, we find that our measure of matrilineal advantage is a convex function of traditionalism. Although caution should be used when interpreting estimates based on only 19 observations, they predict a level of matrilineal advantage in the relation between grandparents and grandchildren equal to 0.354 in the South of Europe and to 0.084 in the rest of Europe.

### *Conclusions*

Using European data, we have documented the presence of a matrilineal advantage in the web of inter-personal relationships involving three generations: grandparents, parents and grandchildren. This advantage indicates that – ceteris paribus - maternal grandparents provide more childcare to their grandchildren, and more financial gifts to their children than paternal grandparents do.

We have interpreted matrilineal advantage as a facet of the exchange of services and gifts involving the three generations: on the one hand, mothers invest more in the relationship with their daughters by looking after their children. On the other hand, daughters provide more intensive informal care to their maternal parents. We have argued that this exchange may have strategic motives, with maternal grandparents

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<sup>16</sup> We use the eigenvector associated with the single eigenvalue higher than one, which explains 79.8 percent of total variance. The index ranges between -2.92 and +1.77.

investing more time and money in the care of their daughters and their daughters' children in the expectation of receiving their daughters' care when in older age. We have shown that that the relative importance of the matrilineal advantage is higher in Southern European societies, which are characterized by both a lower index of gender equality and a lower level of trust in others.

Family relationships across generations have been investigated not only in economics but also in other research fields. For instance, using his field research in non-European societies, anthropologist Levi-Strauss (1949) concluded that the structure of families is determined by the exchange of females between different clans through marriage. This exchange is repeated across generations, forming kinship networks. In economics, these networks play a critical risk-sharing role, not only in developing (see e. g. Rosenzweig and Wolpin, 1985; Rosenzweig, 1988; Rosenzweig and Stark, 1989; Rosenzweig and Wolpin, 1994) but also in developed countries (Hallann and Scharler, 2012).

In our study, we have shown that informal care involving three generations (grandparents, parents and grandchildren) in European countries is permeated by the important relationship between daughters and their parents, especially their mothers. Our results indicate that this relationship is stronger in the South of Europe than elsewhere, possibly depending on economic and social conditions. Daughters are less likely to need help from their mothers in the care of grandchildren if care service is adequately provided by the market or the state. The moral-hazard problems involving principals (parents) and agents (childcare workers) is less likely to be serious in high trust societies, where market exchanges are enhanced (Zak and Knack 2001). Where trust is relatively

low – as in Southern European societies - these exchanges are substituted by help within the family and by closer ties between mothers and daughters. These ties are stronger when the traditional norm of intra-household division of labor – prescribing that women specialize in housework and care - prevails.

Different outcomes in Southern and the rest of Europe can be considered as social equilibria with path-dependence over generations (Aoki, 2001). Southern European countries can be characterized as being more traditional and conservative, also because of the relevant presence of Catholics and Orthodox Christians. In Northern and Central Europe, instead, Protestants exhibit a stronger “social ethic”, that cause them to monitor each other’s conduct (Arruñada 2010), thereby mitigating moral-hazard problems. In particular, Protestants "...support political and legal institutions and hold more homogeneous values...promoting an alternative social ethic that facilitates impersonal trade" (Arruñada 2010, p.890).

The importance of the matrilineal advantage and the strength of the mother-daughter relationship imply that maternal grandmothers have an important role in the development of their grandchildren’s worldview and values. Family values are transmitted from grandmothers to grandchildren via the maternal line. Although there is a view that traditional society is characterized by male dominance, the presence of a matrilineal advantage in the countries of Europe suggests that females play an important role in the transmission of family values even in the more conservative Southern Europe, consistent with findings

for the U.S (Fernandez, et al.2004; Fernandez and Fogli, 2006) and Asia (Kawaguchi and Miyazaki 2009).<sup>17</sup>

Grandparents' childcare of grandchildren not only affects the transmission of values across generations, but influences also the welfare of grandparents. On one hand, grandparents' subjective well-being increases as they spend time with their grandchildren if grandchildren are normal goods (see Dunifon et al. 2020; Powdthavee 2011; Wang et al. 2019). On the other hand, care giving can be hard work, with negative effects on grandparents' mental health and wellbeing (Brunello and Rocco 2019, Yamamura and Brunello 2021).

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<sup>17</sup> Working mothers ask their mothers to care for grandchildren, who develop views and values both about "working mothers" (Fernandez, et al.2004) and about "caring grandmothers".

## Appendix.

In this appendix, we consider a simplified version of Eq. (1), which highlights the interaction between the childcare by own (Y) and partner's grandfathers (OY). Assuming that Y and OY are substitutes, we specify the intensity of grandparents' care of grandchildren as

$$Y = \omega_0 + \omega_1 \text{Daughter} + \omega_2 \text{OY} + \nu$$

(A1)

where  $\omega_2$  is negative, and

$$\text{OY} = \theta_0 + \theta_1 \text{Daughter} + \theta_2 Y + \xi$$

(A2)

where  $\theta_2$  is also negative. Replacing (A2) into (A1) we obtain

$$Y = \pi_0 + \pi_1 D + \rho$$

(A3)

where

$$\pi_1 = \frac{\omega_1 + \theta_1 \omega_2}{1 - \theta_2 \omega_2}$$

(A4)

A stability argument can be used for the two reaction functions (A1) and (A2) to impose that  $\theta_2 \omega_2 < 1$ . In the presence of a matrilineal advantage,  $\omega_1 > 0$  and  $\theta_1 < 0$ , and the overall effect of the gender of the respondent's child G2 on the respondent's childcare is positive. The effect is zero in the absence of matrilineal advantage, and negative with patrilineal advantage.

Table 1. Summary statistics. SHARE waves 1,2, 4 to 7.

	Mean	Standard deviation
Looked after grandchildren during past year (days per month)	2.783	7.811
Received any help from children (days per month)	0.886	4.532
Gave financial or material gift to child (250 EUR or more)	0.116	
Received financial or material gift from child (250 EUR or more)	0.020	
G2: female	0.549	
G1: female	0.659	0.391
G1: age	71.030	9.996
G1: average years of education	8.113	5.017
G1: average household income	26,841	34,290
G1: difficult to make ends meet	0.425	
G1: retired grandparent	0.633	
G1: married grandparent	0.461	
G1: distance from child (in kilometres)	94.359	186.837
G1: born in the country	0.898	
G1: household size	1.795	0.991
G1: self-reported health (1: excellent; 5: poor)	2.616	0.884
G1: probability of living an extra x years	0.482	0.334
G1: family respondent in a couple is female	0.649	
G2: age	39.296	6.610
G2: number of children	1.923	0.979
G2: employed	0.596	
G2: no higher education or training	0.491	
G2: birth order (1: firstborn; >1 laterborns)	1.804	0.962
G2: not living with partner	0.107	
G2: youngest child if aged 10 or less	0.526	
G2: 10 years or more since moving out	0.735	

Note: G1: grandparents; G2: adult children. Means are computed using the individual weights provided by SHARE. When observations refers to a couple, gender is equal to 0.5.

Table 2. Grandparents' care of grandchildren in the past year (days per month). Household fixed effects estimates.

	(1)	(2)	(3)
G2: daughter	0.295*** (0.067)	0.292*** (0.067)	0.325*** (0.070)
Age	-0.089 (0.214)	-0.232 (0.227)	-0.068 (0.232)
Age squared	-0.001 (0.002)	0.000 (0.001)	-0.001 (0.001)
Log household income		0.059 (0.119)	0.068 (0.118)
Retired		0.766** (0.308)	0.790*** (0.307)
Married		0.081 (0.486)	0.125 (0.484)
Distance from child (in kilometers)		-0.001*** (0.000)	-0.001*** (0.000)
Household size		0.285 (0.262)	0.238 (0.261)
Self-reported poor health		-0.069 (0.130)	-0.063 (0.130)
Difficult to make ends meet		0.003 (0.244)	0.001 (0.244)
Female respondent		0.646* (0.371)	0.663* (0.370)
Probability of living x additional years)		0.536 (0.423)	0.521 (0.422)
G2: number of children			0.007 (0.036)
G2: age			-0.074*** (0.016)
G2: not living with partner			0.434*** (0.124)
G2: no higher education			-0.096 (0.134)
G2: employed			0.108 (0.084)
G2: birth order			-0.130*** (0.038)
G2: 10 or more years since moving out			0.080 (0.204)
G2: youngest child aged 10 or less			0.540*** (0.122)
Observations	74,126	74,126	74,126
R-squared	0.819	0.820	0.820

Note: G2: adult children. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes wave and household dummies and dummies for missing values.

Table 3. Grandparents' care of grandchildren in the past year (days per month). Household fixed effects estimates. By gender of respondent.

	(1)	(2)	(3)	(4)
	Look after grandchildren. Female respondent	Look after grandchildren. Male respondent	Helped by children. Female Respondent	Helped by children. Male Respondent
G2: daughter	0.279*** (0.088)	0.275*** (0.100)	0.388*** (0.086)	0.224*** (0.081)
Observations	46,444	27,682	39,876	24,982
R-squared	0.841	0.840	0.592	0.588

Note: G2: adult children. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes a constant, age and age squared, wave and household dummies.

Table 4. Probability that parents G1 gave child G2 financial or material gifts valued higher than 250 euro in the past year. Household fixed effects estimates.

	(1)	(2)	(3)
G2: daughter	0.018*** (0.004)	0.016*** (0.004)	0.013*** (0.004)
Age	-0.015 (0.011)	-0.013 (0.012)	-0.008 (0.012)
Age squared	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Log household income		0.005 (0.006)	0.005 (0.006)
Retired		-0.004 (0.016)	-0.004 (0.016)
Married		0.008 (0.025)	0.003 (0.025)
Distance from child (in kilometers)		-0.000*** (0.000)	-0.000*** (0.000)
Household size		-0.013 (0.009)	-0.013 (0.009)
Self-reported poor health		-0.008 (0.007)	-0.007 (0.007)
Difficult to make ends meet		-0.027** (0.014)	-0.027** (0.013)
Female respondent		-0.017 (0.020)	-0.017 (0.020)
Probability of living x additional years)		-0.005 (0.021)	-0.003 (0.022)
G2: number of children			-0.000 (0.002)
G2: age			-0.003*** (0.001)
G2: not living with partner			0.045*** (0.007)
G2: no higher education			0.007 (0.006)
G2: employed			-0.006 (0.004)
G2: birth order			-0.030*** (0.002)
G2: 10 or more years since moving out			-0.001 (0.008)
G2: youngest child aged 10 or less			0.008 (0.006)
Observations	60,692	60,692	60,692
R-squared	0.673	0.676	0.679

Note: G2: adult children. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes wave and household dummies and dummies for missing values.

Table 5. Care received by G1 from G2 in the past year (days per month). Household fixed effects estimates.

	(1)	(2)	(3)
G2: daughter	0.333*** (0.061)	0.319*** (0.061)	0.262*** (0.063)
Age	-0.299*** (0.102)	-0.228** (0.106)	-0.181* (0.109)
Age squared	0.002*** (0.001)	0.002** (0.001)	0.001* (0.000)
Log household income		-0.017 (0.053)	-0.014 (0.050)
Retired		-0.074 (0.164)	-0.073 (0.164)
Married		-0.283 (0.293)	-0.268 (0.293)
Distance from child (in kilometers)		-0.001*** (0.000)	-0.001*** (0.000)
Household size		-0.063 (0.118)	-0.091 (0.119)
Self-reported poor health		-0.097 (0.067)	-0.094 (0.067)
Difficult to make ends meet		-0.185 (0.123)	-0.187 (0.123)
Female respondent		0.062 (0.149)	0.073 (0.149)
Probability of living x additional years		-0.093 (0.207)	-0.081 (0.270)
G2: number of children			-0.030 (0.026)
G2: age			-0.021** (0.010)
G2: not living with partner			0.169* (0.102)
G2: no higher education			-0.026 (0.088)
G2: employed			-0.233*** (0.063)
G2: birth order			-0.093** (0.035)
G2: 10 or more years since moving out			-0.107 (0.079)
G2: youngest child aged 10 or less			0.018 (0.062)
Observations	64,829	64,829	64,829
R-squared	0.582	0.584	0.585

Note: G2: adult children. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes wave and household dummies and dummies for missing values.

Table 6. Probability that parent G1 received from child G2 financial or material gifts valued higher than 250 euro in the past year. Household fixed effects estimates.

	(1)	(2)	(3)
G2: daughter	-0.003 (0.002)	-0.004* (0.002)	-0.003 (0.002)
Age	-0.001 (0.003)	0.002 (0.004)	0.002 (0.004)
Age squared	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Log household income		0.005** (0.002)	0.005** (0.002)
Retired		-0.018** (0.007)	-0.018** (0.007)
Married		-0.001 (0.009)	-0.002 (0.009)
Distance from child (in kilometers)		0.000 (0.000)	-0.000 (0.000)
Household size		0.002 (0.004)	0.002 (0.004)
Self-reported poor health		0.001 (0.003)	0.001 (0.002)
Difficult to make ends meet		0.006 (0.005)	0.007 (0.005)
Female respondent		0.002 (0.007)	0.003 (0.007)
Probability of living x additional years		0.007 (0.008)	0.008 (0.008)
G2: number of children			-0.000 (0.000)
G2: age			-0.000 (0.000)
G2: not living with partner			-0.003 (0.003)
G2: no higher education			-0.005* (0.003)
G2: employed			-0.000 (0.000)
G2: birth order			-0.008*** (0.001)
G2: 10 or more years since moving out			-0.004 (0.003)
G2: youngest child aged 10 or less			-0.003 (0.002)
Observations	60,692	60,692	60,692
R-squared	0.634	0.635	0.637

Note: G2: adult children. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes wave and household dummies and dummies for missing values.

Table 7. Care received by G1 from G2 in the past year (days per month). Household fixed effects estimates. Only children G2 with no children G3.

	(1)	(2)	(3)
G2: daughter	0.063 (0.046)	0.065 (0.046)	0.080* (0.047)
Age	-0.023 (0.113)	0.035 (0.113)	0.079 (0.118)
Age squared	0.000 (0.001)	0.000 (0.001)	-0.000 (0.000)
Log household income		0.012 (0.032)	0.013 (0.032)
Retired		-0.259** (0.128)	-0.250* (0.128)
Married		-0.476 (0.358)	-0.454 (0.359)
Distance from child (in kilometers)		-0.001*** (0.000)	-0.001*** (0.000)
Household size		-0.024 (0.056)	-0.048 (0.056)
Self-reported poor health		-0.068 (0.065)	-0.068 (0.065)
Difficult to make ends meet		0.040 (0.102)	0.043 (0.102)
Female respondent		0.089 (0.100)	0.093 (0.100)
Probability of living x additional years		-0.489** (0.246)	-0.486** (0.247)
G2: age			-0.000 (0.008)
G2: not living with partner			0.066 (0.057)
G2: no higher education			0.030 (0.062)
G2: employed			0.010 (0.054)
G2: birth order			-0.030 (0.034)
G2: 10 or more years since moving out			-0.076 (0.084)
Observations	47,830	47,830	47,830
R-squared	0.700	0.697	0.585

Note: G2: adult children. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes wave and household dummies and dummies for missing values.

Table 8. Estimated matrilineal advantage (coefficient  $\beta_1$  in Eq. (1)). By age of children G2. Household fixed effects estimates.

	(1)	(2)	(3)
	Children G2 aged below 40	Children G2 aged at 40 or more	Test of difference (p-value)
G1's care of G3	0.917*** (0.158)	0.068 (0.086)	0.000
G1's financial gifts to G2	0.217*** (0.064)	0.272*** (0.070)	0.483
G1 helped by G2	0.015*** (0.005)	0.020*** (0.005)	0.540
G1 received financial gifts from G2	-0.005* (0.003)	-0.002 (0.003)	0.383

Note: G1: grandparents; G2: adult children; G3: grandchildren. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes wave and household dummies and dummies for missing values.

Table 9. Average G1' childcare and financial help to G2 and average G2's care and financial help to G1. Single grandmothers and grandfathers.

	Single Mother's Daughter	Single Mother's Son	Single Father's Daughter	Single Father's Son
Looked after grandchildren (days per month)	2.929 (7.892)	2.086 (6.567)	2.139 (6.571)	1.509 (5.437)
Looked after by child (day per month)	1.234 (5.326)	0.746 (3.969)	0.686 (4.004)	0.416 (2.979)
Gave financial gift to child	0.115 (0.318)	0.099 (0.298)	0.166 (0.372)	0.141 (0.347)
Received financial gift from child	0.029 (0.169)	0.032 (0.175)	0.013 (0.114)	0.018 (0.134)

Note: G1: grandparents; G2: adult children; G3: grandchildren. Standard deviations within parentheses.

Table 10. Estimated matrilineal advantage (coefficient  $\beta_1$ ). Household fixed effects estimates. Single grandmothers and grandfathers.

	G1's childcare of G3 (1)	G1 received care from G2 (2)	G1' financial gifts to G2 (3)	G2' financial gifts to G1 (4)
Daughter * Mother	0.239*** (0.090)	0.542*** (0.114)	0.018*** (0.005)	-0.002 (0.003)
Daughter * Father	0.122 (0.129)	0.347** (0.137)	0.029*** (0.009)	-0.002 (0.003)
Test of difference (p-value):	0.470	0.270	0.329	0.921
Observations	48,372	41,058	40,060	40,060
R-squared	0.851	0.595	0.692	0.655

Note: G1: grandparents; G2: adult children; G3: grandchildren. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes a constant, age and age squared, wave and household dummies.

Table 11. Matrilineal advantage in the South and in the rest of Europe. Household fixed effects estimates. Israel omitted.

	G1's childcare (1)	G2's care of G1 (2)	G1's financial gifts to G2 (3)	G2's financial gifts to G1 (4)
Daughter	0.206*** (0.073)	0.161*** (0.062)	0.023*** (0.004)	-0.000 (0.002)
Daughter * Southern Europe	0.434** (0.194)	0.800*** (0.198)	-0.024*** (0.009)	-0.006 (0.005)
Observations	71,111	61,493	58,116	58,116
R-squared	0.822	0.588	0.675	0.646

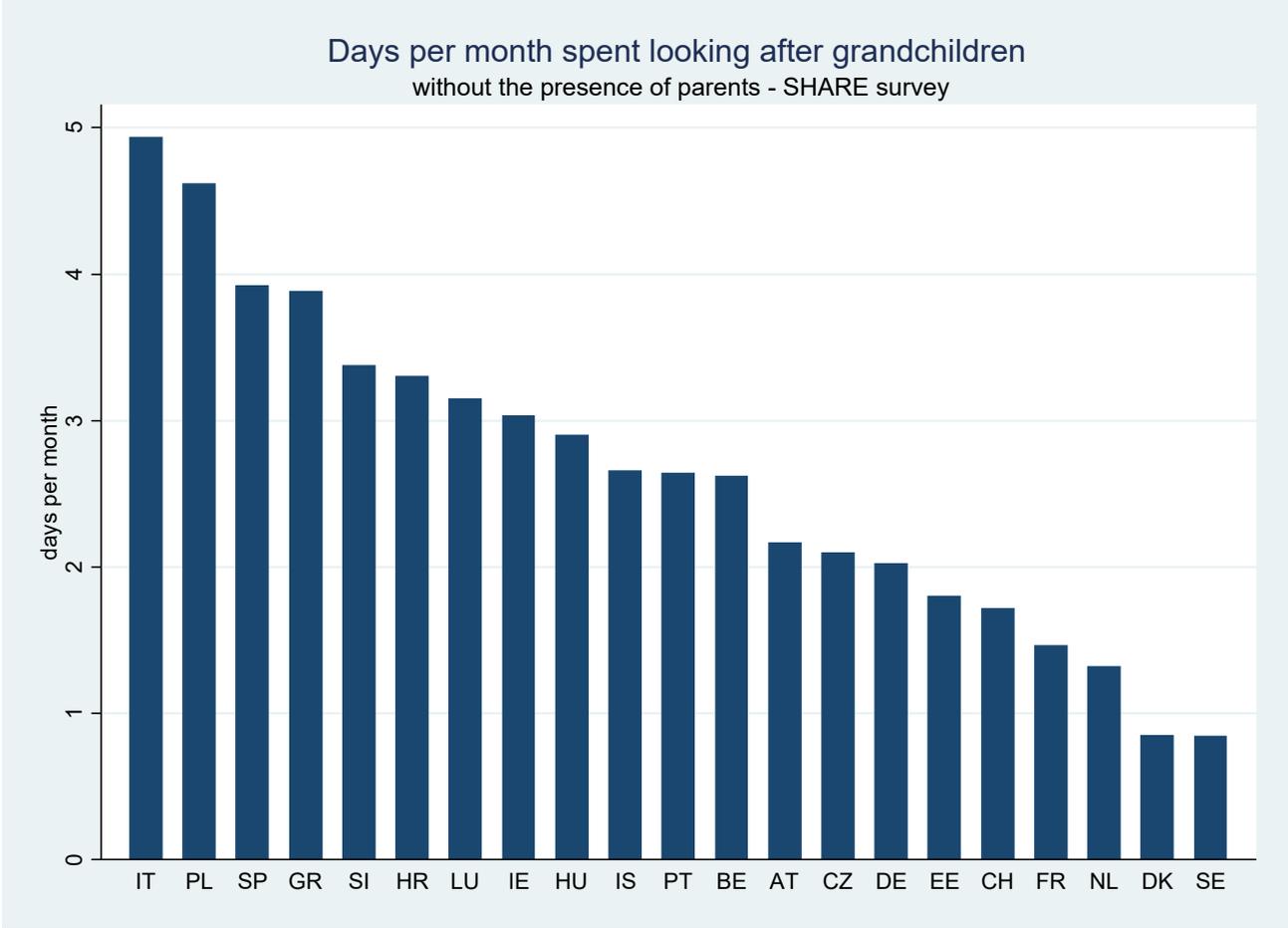
Note: G1: grandparents; G2: adult children; G3: grandchildren. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes wave and household dummies and dummies for missing values.

Table 12. The relationship between matrilineal advantage in G1's care of G3 and the index of traditionalism. Israel and Switzerland excluded.

	Coefficient	Standard error
Index of traditionalism	0.149**	0.060
Index squared	0.074**	0.027
Observations	19	
R squared	0.030	

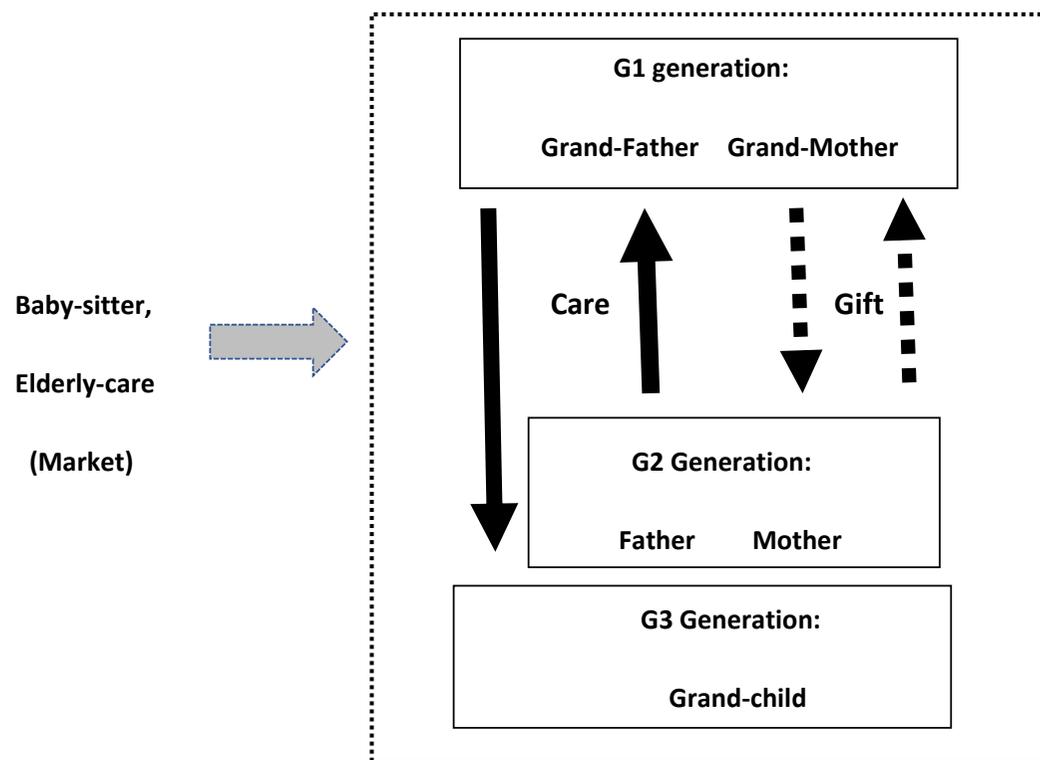
Note: weighted ordinary least squared estimates, using the standard errors of estimates of (1) as weights. \*\* statistically significant at the 5 percent level of confidence.

Figure 1. Days per month spent by grandparents looking after grandchildren. By country.



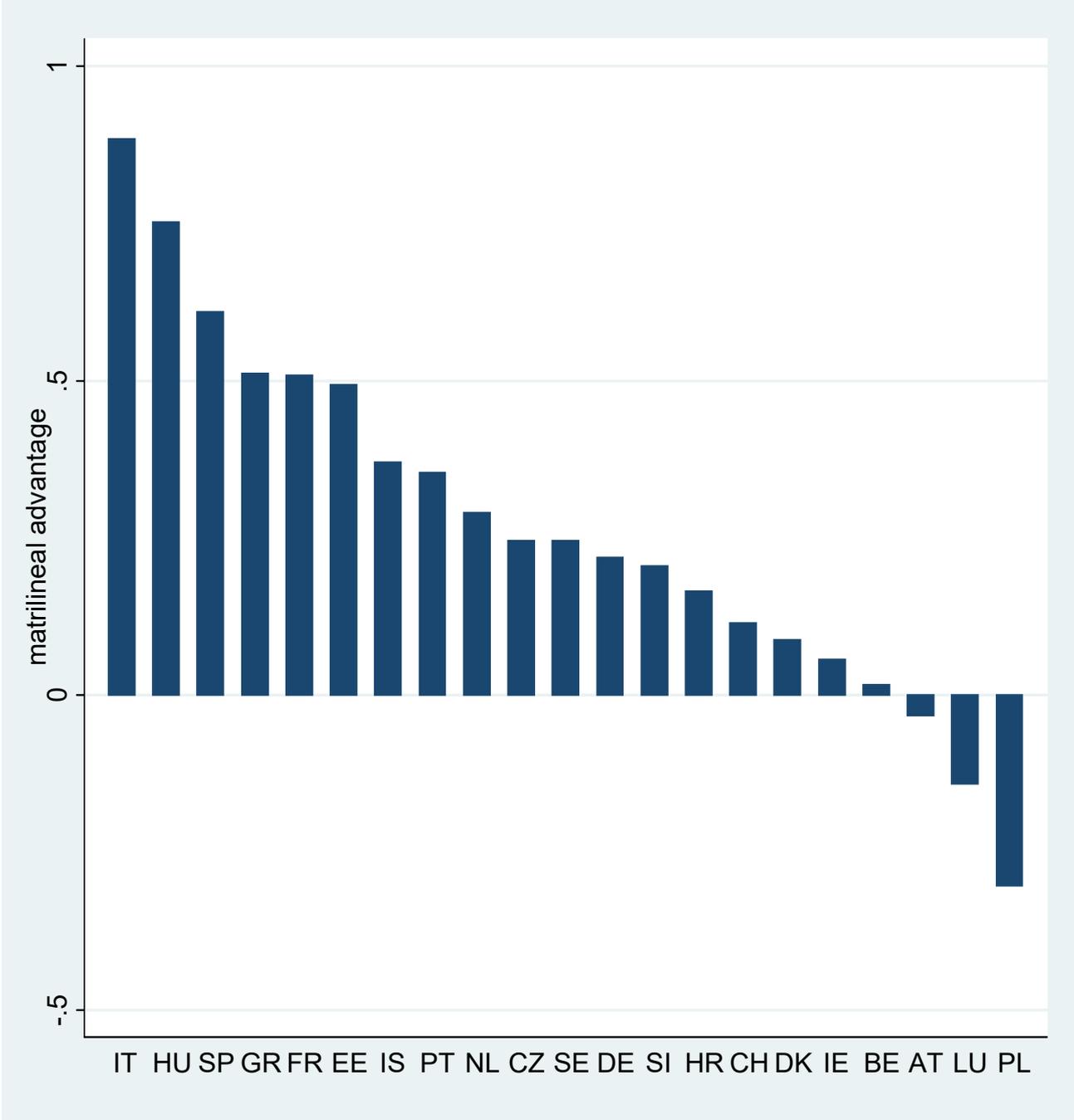
Note: IT (Italy), PL (Poland), SP (Spain), GR (Greece), SI (Slovenia), HR (Croatia), LU (Luxembourg), IE (Ireland), HU (Hungary), IS (Iceland), PT (Portugal), BE (Belgium), AT (Austria), CZ (Czechia), DE (Germany), EE (Estonia), CH (Switzerland), FR (France), NL (Netherlands), DK (Denmark), SE (Sweden).

Figure 2. Flows of family care and gift exchange.



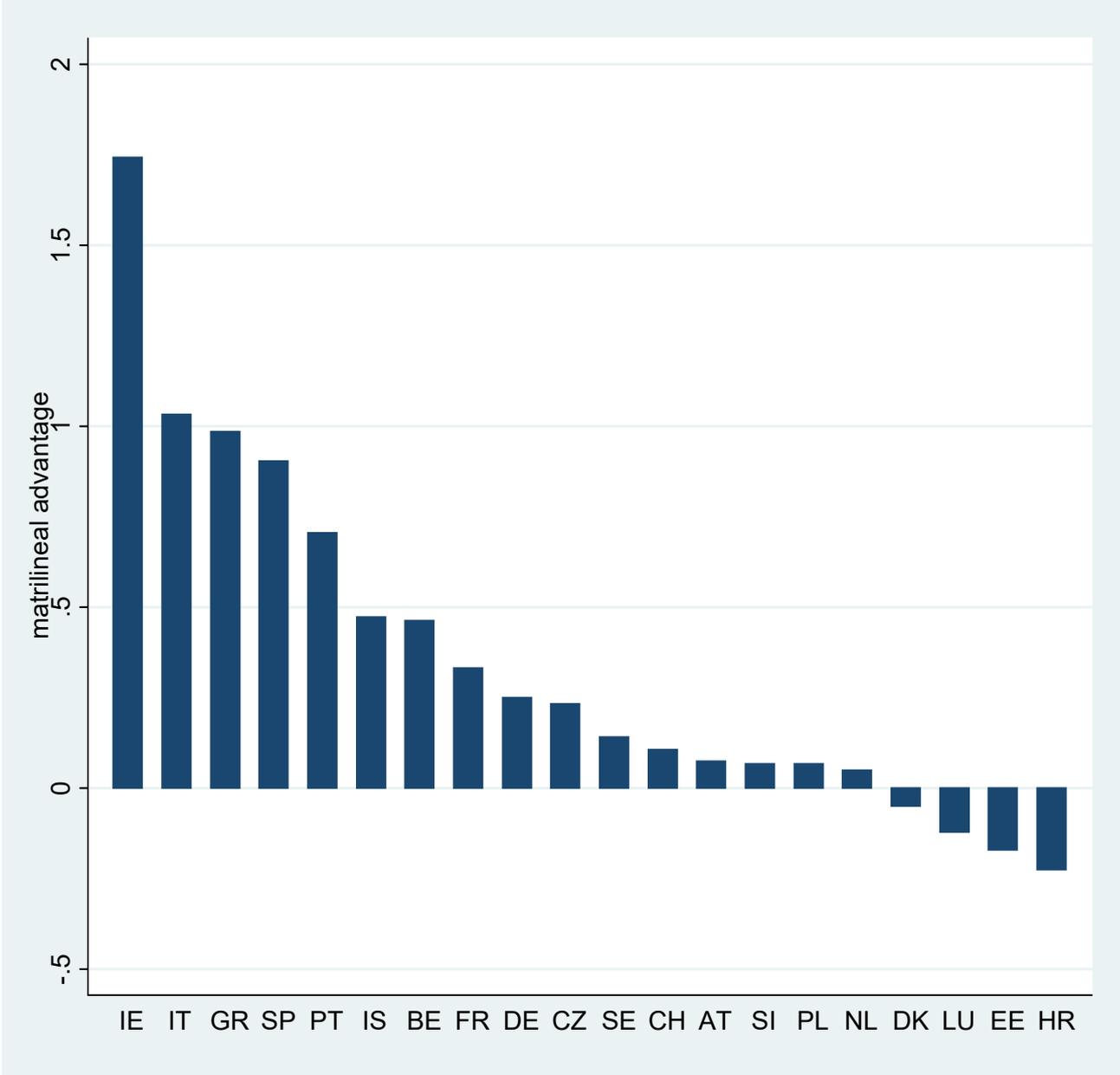
Note: The solid arrows indicate flows of care and the dashed arrows show flows of financial or material gifts. The shaded arrow indicates the service provided in market.

Figure 3. Country specific matrilineal advantage in grandparents' childcare of grandchildren. Household fixed effects estimates.



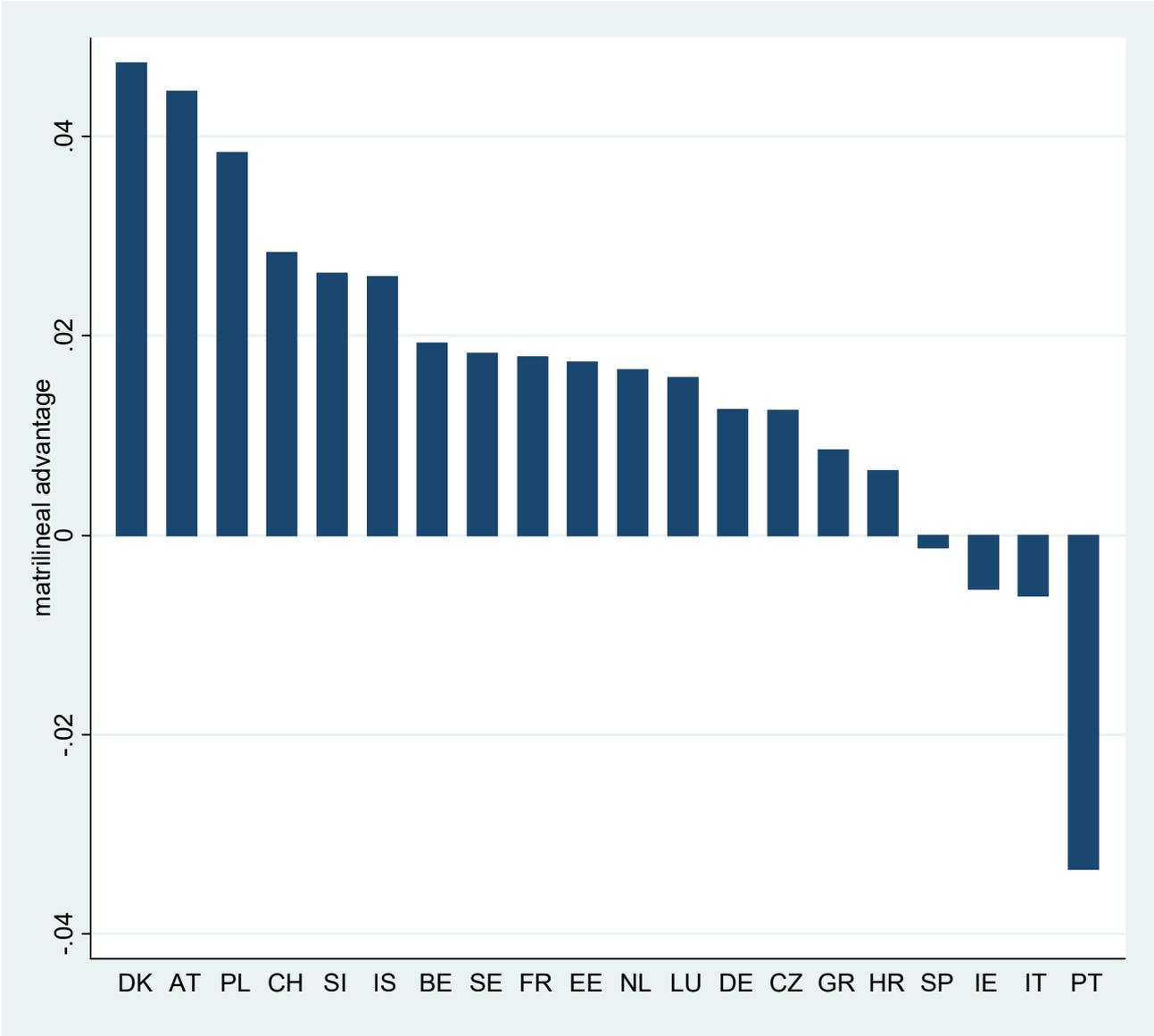
Note: IT (Italy), PL (Poland), SP (Spain), GR (Greece), SI (Slovenia), HR (Croatia), LU (Luxembourg), IE (Ireland), HU (Hungary), IS (Iceland), PT (Portugal), BE (Belgium), AT (Austria), CZ (Czechia), DE (Germany), EE (Estonia), CH (Switzerland), FR (France), NL (Netherlands), DK (Denmark), SE (Sweden).

Figure 4. Country specific matrilineal advantage in children' care of parents. Household fixed effects estimates.



Note: IT (Italy), PL (Poland), SP (Spain), GR (Greece), SI (Slovenia), HR (Croatia), LU (Luxembourg), IE (Ireland), HU (Hungary), IS (Iceland), PT (Portugal), BE (Belgium), AT (Austria), CZ (Czechia), DE (Germany), EE (Estonia), CH (Switzerland), FR (France), NL (Netherlands), DK (Denmark), SE (Sweden).

Figure 5. Country specific matrilineal advantage in grandparents' financial gifts to children. Household fixed effects estimates.



Note: IT (Italy), PL (Poland), SP (Spain), GR (Greece), SI (Slovenia), HR (Croatia), LU (Luxembourg), IE (Ireland), HU (Hungary), IS (Iceland), PT (Portugal), BE (Belgium), AT (Austria), CZ (Czechia), DE (Germany), EE (Estonia), CH (Switzerland), FR (France), NL (Netherlands), DK (Denmark), SE (Sweden).

## Appendix Tables

Table A1. Grandparents' care of grandchildren in the past year (days per month). Household fixed effects estimates. Weighted ordinary least squares.

	(1)	(2)	(3)
G2: daughter	0.322*** (0.115)	0.322*** (0.115)	0.370*** (0.122)
Age	-0.086 (0.347)	-0.190 (0.393)	-0.007 (0.398)
Age squared	-0.001 (0.002)	-0.001 (0.001)	-0.002 (0.002)
Grandparents' controls	N	Y	Y
G2 controls	N	N	Y
Observations	73,959	73,959	73,959
R squared	0.819	0.820	0.822

Note: G2: adult children. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes wave and household dummies and dummies for missing values.

Table A2. Grandparents' care of grandchildren in the past year (days per month). Household fixed effects estimates. With a single observation of each cell indexed by grandparent, child G2 and number of children G3.

	(1)	(2)	(3)
G2: daughter	0.308*** (0.078)	0.306*** (0.077)	0.326*** (0.082)
Age	0.105 (0.312)	-0.039 (0.329)	0.113 (0.332)
Age squared	-0.003 (0.002)	-0.002 (0.002)	-0.003 (0.002)
Grandparents' controls	N	Y	Y
G2 controls	N	N	Y
Observations	64,967	64,967	64,967
R squared	0.867	0.867	0.868

Note: G2: adult children. Standard errors are clustered at the household level. One, two and three stars for statistical significance at the 10, 5 and 1 percent level of confidence. Each regression includes wave and household dummies and dummies for missing values.

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