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No free lunch, Buddy: past housing transfers and informal care later in life

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NO FREE LUNCH, BUDDY: PAST HOUSING TRANSFERS AND INFORMAL CARE LATER IN LIFE

by Emanuele Ciani* and Claudio Deiana**

Abstract

Previous empirical literature on the relationship between intergenerational transfers of assets and services has mostly focused on contemporary exchanges. In contrast, we provide novel evidence that parents who helped their adult children in the past are rewarded by a greater likelihood of receiving informal care later in life. To this end we use Italian data to look at retrospective information about how parents help their children to purchase houses when they get married. Our estimates show a positive association with the current provision of informal care, which is robust to controlling for a large set of individual and family characteristics. We provide evidence that this can be explained by various self-interest motives, relating to theories based either on bilateral exchange or on the presence of a third generation of grandchildren, such as those including a demonstration effect or the concept of a family constitution.

JEL Classification: D10, J13, J14.
Keywords: informal care, housing, intergenerational transfers, geographical proximity.

Contents

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1   Introduction[1]

Inter-vivos transfers between members of the extended family network are both heterogeneous in type (monetary, in-kind, time) and in motives. In developed countries, upstream transfers are mainly in form of caregiving (time) from adult children to their elderly parents (Arrondel and Masson, 2006). Conversely, downstream financial and in-kind transfers usually take place at an earlier stage of the life-cycle, when young individuals invest in their human capital and when they leave the nest to establish a new family, possibly acquiring their own house. These past transfers are particularly important since they affect the process of wealth formation, both influencing the young individuals' decisions and determining the degree of future wealth and income mobility.

In this paper we contribute to the literature by providing novel empirical evidence about whether adult children who received economic assistance in the past from their parents are more likely to currently provide informal care to them. This helps to shed new light on how the members of the extended family network enforce implicit agreements of mutual assistance that extend over time. Downstream and upstream intergenerational transfers usually take place in different moments of the life cycle, often more than a decade apart. If nothing prevents the younger generation to shirk, the two generations can end up in a prisoner dilemma where none of them assists the other part. Furthermore, as long as the two transfers are tightly related, public policies that affect one of them, such as taxation and old-age security, may also have an impact on the other. Most of the empirical literature focuses on the contemporary exchange, which can hardly offer insights about inter-temporal choices. Differently, by using Italian data containing a rich set of retrospective information, we provide robust evidence that couples who received from their parents economic assistance with housing at the time of marriage are more likely to provide them informal care later on in life.

The relation between downstream financial transfers from parents to adult children and time transfers flowing in the opposite direction (e.g. attention and caregiving) has been subject to a lively debate in the literature, starting from Bernheim et al. (1985). The motive underlying them is crucial in understanding how they can be affected by different policies. While an altruistic model implies crowding-out of private transfers by public redistribution, the one based on exchange allows for the possibility of crowding-in (Cox, 1987). Other models, based on self-interest, consider the presence of a third generation as crucial in supporting the mutual assistance among generations (Cox and Stark, 2005; Cigno, 2006). This approach

implies different predictions for the effect of mandatory retirement schemes on intra-family transfers.

To enrich the discussion, we describe four possible explanations of our main result, which point in the direction of exchange and self-interested motives rather than altruism. First, the parents seem to take into account the opportunity cost of their help since past housing transfer negatively correlates to regional house prices. Second, there is a clear evidence that parents use the housing transfer to signal to their children the possibility to further presents. Third, part of the actual exchange occurs between housing help and geographical proximity, which decreases the cost of care and increases social control, leading to a higher likelihood of informal care. Last, we show that parents who help with housing seem to be investing in the presence of a third generation of grandchildren, as predicted by models based on a family constitution or on the demonstration effect (Cigno, 2006; Cox and Stark, 2005, respectively).

The vast majority of the literature that tries to estimate the relation between downstream transfers and upstream caregiving focuses on the contemporary association. Among the most recent (see McGarry and Schoeni, 1997; Altonji et al., 2000, for previous results), Norton and Van Houtven (2006) and Norton and Huang (2013) find evidence that caregivers are more likely to receive money from their parents although there are no differences in terms of amount. Conversely, according to Jimenez-Martin and Prieto (2015), informal caregivers receive less transfers. Few empirical studies provide some evidence about the relation between past transfers and in-kind services provided by the adult children later on in life, as our analysis demonstrates. McGarry and Schoeni (1997) find that the provision of informal care to parents is negatively related to financial transfers received from them in the previous 10 years, although they also find that parents giving more money expect to receive more (time) help in the future. Arrondel and Masson (2006), citing the results from Wolff (1998) and Arrondel and Masson (2001), claim that in France neither past gifts nor grandchildren care received from parents seem to explain current time transfers to them. Furthermore, helpers do not seem to have received a higher investment in education in the past, nor to expect higher bequests. The authors also refer to Cox and Stark (1998), who instead provide empirical evidence that helpers are more educated, so that they may be paying back the past investment from their parents. Arrondel and Masson (2006) conclude that help provided to elderly parents is more likely to be explained by altruism or by a system of indirect reciprocities between generations, where young adults either follow what their parents did in the past for their own parents, or hope that they will be imitated by their own children. Other studies, in particular Tomassini et al. (2003) and Coda Moscarola et al. (2010), point out that those receiving help with housing are more likely to live near to their parents. Although geographical distance is a good proxy for time transfers, both papers do not directly estimate the relation between them and housing transfers. To conclude, in a recent study, Brugiavini et al. (2013) points to the reciprocity between grandchildren and elderly care.

We contribute to this limited empirical literature analysing the relation between transfers at different points in time by using data from three cross-sections (1998, 2003 and 2009) of the

Italian Multipurpose Survey on Families. This survey contains a retrospective information on help received from the parents with housing at the time of marriage, as well as information on the family network and on the current exchange of services, including informal elderly care provided by the adult children to their parents. The 1998 wave of the Multipurpose Survey was already used by Tomassini et al. (2003) to study the relation between past help with housing and current geographical distance.[2] Their results, based on a multinomial logit, show that adult children tend to live closer to the set of parents (wives' or husbands') that provided help with housing at marriage, and to both if they both helped. Differently from them, we directly analyse the link with the current provision of informal care to the parents. In doing so, we try to understand how the system of mutual assistance lasts over time, and we show that only a fraction of the result can be explained by increased proximity. Other mechanisms, that are related to mixed motives, seem to be relevant in this context. Furthermore, although our main results involve the couple as a whole, the focus on informal care also allows us to understand which partner is mostly involved in this intergenerational exchange.

We focus on help with housing at the time of marriage for several reasons. To begin with, housing costs represent a large fraction of income and European households generally perceive them as a heavy burden (Pittini, 2012). Second, it involves a quite significant fraction of adult couples, consistently with previous evidence about the fundamental role of the family in supporting entry into home ownership (Mencarini and Tanturri, 2006; Helderman and Mulder, 2007; Modena and Rondinelli, 2011). Third, this help takes place at the moment in which a new household is formed and therefore it makes the distinction between the two generations clear. This is particularly true in Southern Europe, where liquidity constraints for the young are more severe and households traditionally acquire real estate either using personal savings or through family transfers or inheritance (Chiuri and Jappelli, 2003). Last, this past transfer is precisely identified in the Multipurpose Survey, while other forms of past economic assistance are collected only with reference to specific moments of economic hardship. Nevertheless we also discuss them in our empirical analysis.

The remainder of the paper is organised as follows: Section 2 discusses the conceptual framework. Data are presented in Section 3 and main results in Section 4. Section 5 discusses whether our findings are in line with different theoretical models, and provides additional evidence which helps discriminating between them. We conclude the discussion of our findings in Section 6.

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[2]Cigno et al. (1998) also used some statistics from an earlier wave (1987-1991) to show that also those parents that report to be in excellent financial conditions have a large probability of receiving personal or financial assistance from relatives or friends. This suggests that altruism is not likely to be the only explanation. Unfortunately, the micro-data from this earlier wave are not currently available.

2 Conceptual framework

Our main aim, pursued in Section 4.1, is to understand whether the evidence suggests that those children who received help from their parents with housing at the time of marriage are more or less likely to provide informal care to the older generation later on in life. By informal care we mean a time-consuming service that the individual explicitly identifies as "help provided to non-coresident adults", consisting of either medical assistance, household chores, company or paper-work. Following Arrondel and Masson (2006, p. 1009) we exclude contacts and visits, as it is difficult in these cases to know who benefits from them (Wolff, 2001, for details).

Different motives behind the transfers may lead to different predictions. For a detailed discussion of the models presented in this section, see Laferrere and Wolff (2006). A first approach is based on a strategic bequest motive (Bernheim et al., 1985), where the parent promises a larger fraction of the remaining wealth at death to the child who provides the most help.[3] The competition between siblings leads them to provide more services to him/her. This implies that a contraction in bequeatable wealth, in this case the housing transfer, should reduce the incentive for siblings to compete for it, and therefore the amount of informal care should shrink.

Differently, the presence of both downstream and upstream transfers in different points of the life cycle could be expected if we assume that there is pure altruism on both sides. Parents, who value their children's utility or consumption, help them when they are liquidity constrained but they nevertheless want to move out and form a new family. In this way the parents reduce their own wealth and will be more in need of help in the future, so that their child, who is also altruist, will provide more help. To help understanding whether this simple model explains the results, in Section 5.1 we study how the opportunity cost of the housing transfer, which is house prices, affect the parents' decision at the time of marriage. Assuming that parents already own at least their own house but children do not, as it is usually the case in Italy, when house prices rise the older generation's wealth increases, while the real income of the younger one drops. Parents should therefore be more likely to help their children.[4]

The model proposed by Cox (1987) can also predict the presence of both downstream financial assistance and upstream services. In his setting, the parents dominate the decision. They care not only about their child's utility, but also about a personal service provided by the latter for which there is no direct market substitute. For the child side, the service only brings utility costs. Hence the parent provides a transfer in order to compensate for this disutility.

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[3]Recently, Groneck and Krehl (2017) provides evidence that those who provide more elderly care are more likely to receive a larger share of bequests in the future. There is a large literature that discusses the role of bequests and their differences with inter-vivos transfers; see, among others, Tomes (1981); McGarry (1999); Laitner and Ohlsson (2001); Nishiyama (2002).

[4]This may not be true in some extreme circumstances, in particular when the parents already own a house that could be transferred to the children, but the house is too big for his/her needs and the increase in price is large enough to make the optimal transfer smaller than the income loss from donating the house. In this case the parent could switch from a real estate transfer to a monetary transfer and we may not see it in the data.

One key assumption of this model regards the fact that the dominant parent needs to make sure that the child will provide the service agreed upon. Cox (1987) assumes that this contract is enforced through social control. This, however, may be hard to justify when the service occurs much later in time, as in our case (see Cigno et al., 1998, for a similar comment). One possibility, somehow related to the idea that the old generation uses future transfers strategically, is that the parent promises to later compensate the children who is currently helping. In this case, it might be that past housing help is just a signal about the future availability of further financial help, so that the actual exchange is between contemporary transfers. In Section 5.2 we discuss this hypothesis. Another possibility, discussed and explored by Tomassini et al. (2003) and Coda Moscarola et al. (2010), is that the service is not informal care per se, but geographical proximity. Parents buy their children a house nearby, compensating them for possible income or utility losses due to constrained mobility. Given that smaller geographical distance reduces the cost of care, this could explain our findings. In Section 5.3, we discuss to what extent our results can be explained by increased geographical closeness to parents.

Cox's (1987) model allows for both altruism and exchange. The former arises when the parent more than compensates the child for his/her utility loss, while the latter refers to the case in which there is no extra compensation. Although the two situations lead to different results regarding the quantity of the downstream transfers, the prediction regarding the likelihood of the transfer is the same. In both cases, an increase in the parent's income and a decrease in the child's should increase the chances of a transfer.[5] As in the bilateral altruism model above, we would therefore expect, also in this case, the parent to be more prone to provide a transfer when house prices increase. As a consequence, this should lead to higher chances of receiving a service in the future.

Some alternative models take into account that inter-vivos transfers usually occur between three generations. According to Cox and Stark (2005), elderly parents may invest in their adult children's housing or consumption in order to increase the "production" of grandchildren, expecting that their presence will induce the middle generation to set a good example by providing elderly care in front of their own young offspring. This should generate the so-called "demonstration effect". Another model, proposed by Cigno (2006), assumes instead that the generations are involved in a strategic game where adult children need to choose whether to follow the rules of an (unwritten) "family constitution" or not. In the first case they have to provide help to their own elderly parents (from which they have received in the past) and to the younger generation. In the other case they do not provide any help, but they will be excluded by the family informal agreement so that they will not receive any help in the future.

Both the demonstration effect and the family constitution models share two common predictions. The first is that providing help to your own children can be interpreted as a

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[5]The predictions regarding the quantity of the downstream transfer have been tested by a long-lasting literature. A non exhaustive list includes Cox and Rank (1992); Altonji et al. (1997, 2000); Cox et al. (2004); Alessie et al. (2014).

kind of investment, which has an internal rate of return given by the chances of receiving care in the future. The higher the opportunity cost of providing this help, the lower are the chances that the parents will opt for this investment, no matter the needs of the children. In this case, contrary to the previous models, we would therefore expect that when house prices are higher the parents are less likely to transfer real estate to their offspring and to receive care in the future. The second prediction stems from the fact that the past help provided by the parents has no chances of leading to more future elderly care if there is not a third generation. Therefore we should observe that it leads to increase fertility and that parents may provide additional services aimed at the third generation, such as grandchildren care. We discuss this second prediction in Section 5.4.

Although each model is associated with specific implications, different families in different contexts may be characterised by a variety of motives. Arrondel and Masson (2006), revising the empirical literature, conclude that a single model is not likely to capture the entire heterogeneity in intergenerational transfers. In their case they propose a combination of family constitution rules, altruism, life-cycle savings and accidental bequests (Arrondel and Masson, 2006, p. 1020), together with indirect reciprocities across generations. More recently, Park (2014) studies upstream financial transfers from adult children to old parents in South Korea, and argues that altruism and exchange may be operative at different levels of parental income. In evaluating the evidence we, therefore, take into account the possibility that not a single motive is prevalent in our data.

3 Data

3.1 Dataset and variables of interest

We use data from three waves of *Multiscopo sulle Famiglie, soggetti sociali e condizione dell'infanzia* (Multipurpose Survey on Family and Childhood Conditions), a cross-sectional survey carried out by ISTAT in 1998, 2003 and 2009 on the private household population of Italy. The survey sampled around 30,000 households, to collect information on household structure, family network, unpaid assistance, important life cycle events and labour market conditions. The total sample size includes 152,441 respondents. The dataset is a stratified sample where strata are defined by region and size of the town/city of residence. In our estimates we do not use sample weights, both because we pool three cross-sections, and because we focus on modelling the relationships among different variables, so we follow the quite standard approach of including the regional dummies among the covariates.[6]

In the analysis we take the married couple of adult children as the unit of observation i,

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[6]We also know from Solon et al. (2015) that, in the case of misspecification, it is not clear whether unweighted estimates produce a good approximation. Given that this is not guaranteed even when using weights. Moreover, to guarantee anonymity, the dataset is released in two versions that cannot be merged: in the first one, the region of residence is provided, but not the size of the town; in the other one, the size is provided but only broader geographical areas are available. We prefer to use the former, as it allows to control for aggregate differences across regions, for instance heterogeneity in mortgage accessibility.

although we also present some results for wives and husbands separately. In all the waves, adults are asked whether they have provided any help to non co-resident individuals in the four weeks previous to the interview. They then have to specify the most important kind of help they provide, and who receives it, with possible multiple recipients. Around 85% of those who report that their most important help is directed toward their parents say that it consists of informal care. We define the dummy *ICP* (Informal Care Provided) equal to one for those couples where at least one of the partners reports that this help is directed to a member of the older generation (parents or in-laws), and that it consists of either direct medical assistance (e.g. injections), adult care (e.g. help with bathing or eating), household chores, company, or paper work. The fact that we observe elderly care only when it is the most important help provided to non co-resident individuals can lead to an underestimate of the total amount of caregivers. Nevertheless, we still find that around 21% of the couples provide informal care to the older generation.

Our main explanatory variable, *Help with house*, is a dummy for help received with housing at the time of the marriage. The assistance could be either a transfer in-kind, where parents from either the wife's or the husband's side donate the house or make it available for free (or for a small sum), or an earmarked monetary transfer for purchasing or building a house. The latter includes both gifts and loans, implicitly assuming that the loan is either more convenient or more accessible compared to the "formal" market. Around two thirds of those who received help declare that the transfer was in-kind. Notice that this does not necessarily mean that the older generation already owned the house, but simply that there was no contribution from the side of the younger generation. Therefore, in these in-kind cases, it is likely that the younger generation had less voice in choosing the location.

To discuss some hypothesis, we also exploit the house price database, provided by Nomisma, that contains the prices of the houses per square metre (from 1965 to 2009) in each of the Italian provinces for each year. Given that the province identifier is not available in the public release of the Multipurpose survey, and that not all provinces are always available, we take the simple average of prices at the regional level. One of the problems is that the number of provinces has changed through time, both for administrative reasons and because the sample was progressively extended. We choose to make use of all available information by simply averaging across available provinces in each region and each year. Nevertheless, in Appendix A we show that price trends are fairly smooth (apart from a spike in the Lazio region in the 1983), and therefore the change is not likely to significantly alter the dynamics by cohort. Furthermore, results using house prices (section 5.1) are almost identical if we drop the regions that registered some changes in the number of provinces through time. The most expensive regions in terms of housing price are Lombardy and Lazio. In Appendix A we also show other descriptive statistics for this variable.

3.2 Sample selection

Sample selection, reported in Table 1, is mostly driven by the definition of past housing help that we observe. We restrict our analysis to married cohabiting couples and we consider them as the adult children, or "middle" generation. To maintain consistency and distinguish the partners where needed, we refer to them as "adult wives" and "her partner" or "husband". Differently, the older generation is referred to as "parents". Only when necessary, we distinguish between "parents" for the wife's side and the "in-laws" for the husband's. Finally, the third generation is considered to be the "grandchildren". We neither consider separated individuals nor widowers for several reasons. First of all, we are constrained by the 1998 wave, which asks the questions on housing help at the time of marriage only to married and cohabiting women. Second, in those cases in which the partner is dead or living elsewhere, we do not have information on the in-laws. Finally, these are quite different cases, where we should also account for the dynamic of the marital history with consequently differences in potentially financial shocks.

In order to correctly identify the adult children, we keep only cases where one of the partners is the reference person of the interview, which are anyway the large majority. Given that we are interested both in help received from elderly parents or in-laws and in help provided to them, we select couples aged between 20 and 70 years old.

Table 1: Sample selection

	1998		2003		2009		Total
	Obs	%	Obs	%	Obs	%	Obs
Original sample	59050		49541		43850		152441
Only married cohabiting couples	29750	-49.6	24138	-51.3	20918	-52.3	74806
Only if reference person or partner	29038	-2.4	23574	-2.3	20464	-2.2	73076
Only one observation per couple (wife)	14519	-50.0	11787	-50.0	10232	-50.0	36538
Only if both partners aged between 20 and 70	12993	-10.5	9990	-15.2	8233	-19.5	31216
No previous marriage of the wife	12865	-1.0	9845	-1.5	8055	-2.2	30765
With at least one parent alive on both sides	7466	-42.0	5247	-46.7	4289	-46.8	17002
Not cohabiting with parents or in laws	7143	-4.3	5065	-3.5	4146	-3.3	16354
Excluding those with parents or in laws abroad	6966	-2.5	4863	-4.0	3788	-8.6	15617

The information on marriage is collected with respect to the last wedding in 1998, and to the first one in 2003 and 2009, and therefore we exclude cases of previous divorce or widowhood. These were still a minority in 1998, and slightly increased in 2003 and 2009 (Table 1). We restrict the sample to couples where there is at least one parent alive on both sides, because our interest lies on inter-vivos exchange of family services.

We also exclude those cases where the couple cohabits with parents or in-laws at the time of the interview, because the survey does not allow us to identify elderly care in such cases. This involves only around 3% of the couples. We nevertheless keep those who, at the time of marriage, moved in to live with parents or in-laws but are currently living on their own. We control for this choice of past cohabitation in all the regressions, as this constitutes an important alternative to provide help with housing. We choose to keep it distinct from *Help with house* for three main reasons. First, in this case it is impossible to separate geographical

distance with housing assistance. Second, it may involve sensibly different preferences and, because of the co-residence, a different decision mechanisms. Last, as discussed in Section 3.3, this phenomenon is rather marginal for younger generations.[7]

Lastly, we exclude the few cases with parents or in-laws residing abroad, because these are likely to be driven by sensibly different migratory processes. Our final sample contains couples who married between 1956 and 2009. The median is 1988. Excluding the 1% tail married before 1965, the distribution is symmetric.

3.3   Is housing help at marriage a relevant transfer?

Table 2 shows the incidence of earmarked transfers, which appear substantial. About one third of the married couples in our sample received financial support for the purchase of a house at the time of marriage. Similarly, Guiso and Jappelli (2002), using the Bank of Italy Survey on Households Income and Wealth, find that 28% of Italian households have acquired real estate properties through a gift, or with the financial help of relatives, or as a bequest. More recently, Jappelli et al. (2014) show that the proportion of households who received real estate transfers rose from 30% in 1993 to above 35% in 2006, which is similar to the increase over time that we find in this paper. These numbers are large but in line with the evidence available for other countries. For instance, Villanueva (2005) finds that bequests account for 31% of total net worth for the US and slightly less for Germany.

Table 2: Transfers earmarked for home purchase from parents or in-laws

Housing transfer	Year			%
	1998	2003	2009	
No	71.3%	71.3%	64.4%	68.9%
[Obs.]	[4, 967]	[3, 466]	[2, 429]	[10, 862]
Yes	28.7%	28.7%	35.9%	31.1%
[Obs.]	[1, 999]	[1, 397]	[1, 359]	[4, 755]
Total	6,966	4,863	3,788	15617

Note: the sample has been selected from the Multipurpose Survey on Family and Childhood Conditions Dataset (1998/2003/2009). In squared brackets we show the number of observations.

This statistics suggest that the help with housing at the time of marriage is one the most relevant inter-vivos transfer. The survey also allows us to recover some information on other transfers received by the couple. We build a dummy variable *OH* equal to one if the couple received further transfers from parents or in-laws after the time of marriage and up to the moment of the interview. The information (available only for 1998 and 2003) is collected through retrospective questions and refers to monetary help during difficult or particularly demanding economic circumstances.[8] Only 6% of the couples in the sample received this kind of help and some of them also received help with the house at the time of marriage.

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[7]The results are the same when excluding the past cohabitation cases.

[8]This can be due to unemployment, eviction, insufficient household income, debts, health related problems or, finally, financial needs to set up or run a business.

Furthermore, in the sample (still limited to the 1998 and 2003 waves) we also know how many couples are currently helped by parents or in laws with economic transfers.[9] The proportion is quite limited, around 2.4%. The focus on contemporary exchange, therefore, limits the analysis to a narrow fraction of the overall transfers, as it neglects that several adult children already received economic assistance in the past.

4   Results

4.1   The relation between housing help and elderly care

We analyse the relation between past housing transfer and the current provision of informal care to parents by regressing ICP on $Help\,with\,house$ and a set of controls X:

$$ICP_i = \beta_0 + \beta_1 Help\,with\,house_{i,tm} + X_i'\beta_2 + \varepsilon_i \tag{1}$$

where i is the adult children couple. For a matter of clarity, the subscript tm indicates that the housing transfer occurs at the time of marriage, which took place prior to the individual current interviews (1998, 2003 and 2009). The association between inter-vivos family transfers and help received with housing may be driven by: *(i)* differences across cohorts and areas; *(ii)* correlation between housing help and different demographic characteristics that may influence the exchange of services and *(iii)* differences in wealth between families with and without housing wealth. We select the control variables to try to account for this heterogeneity. We include dummies for wave and region of residence in all regressions. As already discussed in Section 3.2, we control for a dummy for whether the couple moved in with parents or in laws at the time of the marriage. We also consider the number of children in the household, a dummy for their presence, and the age of the youngest child coded to 0 if no children are present. Both account for the fact that the presence of offspring reduces the available time to dedicate on ICP. For both partners we control for age, in order to account for the stage in the life cycle (we also discuss whether there are strong cohort effects, see Section 4.3). We include also the number of siblings and a dummy for their presence, given that they strongly reduce the need for ICP (see Rainer and Siedler, 2009). We do not know where siblings live with respect to the parents.

Dummies for educational attainment and presence of health limitations (interacted with wave dummies to account for a minor change in the questionnaire wording) are considered. The former can influence the preferences towards housework, although they are also good proxies for income, while the latter account for possible problems in helping other persons. For each of the parents and in-laws we include variables that may shape their demand for assistance. In particular, we add their age and dummies for (parents') educational attainment when the respondent was 14 and for their health limitations interacted with wave dummies

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[9]This refers to those who report that the main help received by the family is an economic transfer that comes from parents or in-laws.

to account for a minor change in the questionnaire wording. Given that it may be that only one parent or in-law is alive, we also add two dummies indicating whether only the father or only the mother is alive. If a parent is dead, age and limitations are set to zero but the relative dummies account for this case. The same variables are included for in-laws.

As for the differences in income and wealth across households, we include as covariates the number of rooms, televisions, mobile phones, motorbikes and cars and, in addition, dummies for the kind of dwelling and tenure. For both partners we add dummies for employment status, extended to account also for the kind of occupation, and for the main source of income (labour, pensions, wealth). Finally, for all parents and in-laws we include dummies for their employment status when the respondent was aged 14. Here we discuss only the main results of interest, but the coefficients on the various control variables, which can be found in Appendix A (Table A.3), appear in line with intuition.

Table 3: Linear Probability Model (LPM) for ICP (informal care provided to parents or in-laws)

Dependent variable	(1) ICP	(2) ICP	(3) $ICP_{parents-inlaws}$	(4) ICP
Help with house	0.020***	0.026***		
	(0.007)	(0.008)		
$HwH_{parents-inlaws}$			0.016**	
			(0.007)	
Contemp. Monetary Help				0.086***
				(0.026)
Observations	15617	15617	11829	11829
R^2	0.006	0.090	0.061	0.092
Waves, regions	X	X	X	X
Demographic characteristics		X	X	X
Wealth characteristic		X	X	X

Note: * p<.10 ** p<.05 *** p<.01. ICP is a dummy equal to 1 for the adult couple who provide elderly care to parents or in-laws. In column (3) and (4) the dependent variable is the difference between ICP to parents and in-laws and Contemporary Monetary Help, respectively. In both cases the 2009 wave is not available. Waves (1998, 2003 and 2009) and (19) regional dummies are included. The following demographic characteristics are include both for each partner of the adult couple and for each parent and in-law: age, health limitations (reference category: no health problem), dummies for parents and in-laws alive and level of educational attainment (reference category: elementary). For the adult couple we consider a dummy for having a siblings and the number of them; we include a dummy which for having a child inside the household, the number of them and the age of the youngest one. The wealth characteristics are: dummies for tenure status (reference category: rent), type of house (reference category: terraced), number of rooms, mobile phones, TVs, motorcycles, cars. We also include job occupations (reference category: clerical worker) both for the adult couple and for each parents and in-laws at the time in which the (current) adult child was 14 years old. We finally control for the main source of earnings (reference category: dependent employee). Robust standard errors in brackets.

Table 3 starts from a basic specification which includes only waves and regions dummies. Adult children who have been helped by their parents with the house (at the time of the marriage) are more likely to currently provide them elderly care. The relation is likely to be affected by different demographic characteristics, in particular age, given that there are significant differences in the importance of the housing help over time. Once we add the full set of characteristics (column 2), the estimated coefficient increases to 2.6 percentage points. One of the reasons is that the proportion of couples that received help with housing increased

over the years, but younger couples are less likely to provide care, because their parents are younger. Hence, once we control for demographic characteristics of both generations (instead of including only wave and regional dummies) the estimated effect becomes larger. If, following Oster (2013), we assume that the selection on observables is proportional to selection on unobservables, it is possible to calculate the omitted variable bias looking at the coefficient movements of the R^2. Assuming also that the maximum R^2 that we could reach including all the relevant omitted variables is 1.3 times the observed R^2 (from column (2)), as proposed by Oster (2013), then the estimated effect taking into account the bias would be even slightly larger than the one we show. The estimated impact is non-negligible, given that the proportion of informal carers in the overall sample is around 21%.[10]

An alternative strategy could be to compare the two sides of the family, that is parents vs in-laws. If our main results from column (2) are simply driven by couples who are more altruistic or more prone to provide elderly care, than we would expect the positive effect to disappear when we distinguish the two sides. In column (3) we follow this strategy by replacing the dependent variable with the difference between a dummy for informal care provided to parents (i.e. the wives' side) and a dummy for informal care provided to in-laws (i.e. the husbands' side). Similarly, the main regressor is now the difference between a dummy for having received housing help from the parents and the one for having received the help from in-laws. A positive coefficient would imply that, when only one side provided housing help, that side also receive more informal care. We cannot use the last wave because the questionnaire is slightly different and does not allow us to distinguish the two sides with regards to housing help. The results are in line with the main finding that those parents who provided more help are more likely to receive care in the future.

In the last column we substitute past help with a dummy for those couples who are currently receiving economic transfers from their parents (*Contemp. Monetary Help*). This is also not available for the 2009 wave.[11] In line with the literature, the effect on the provision of informal care to parents is quite large, amounting to 8.6 percentage points. Although this effect is stronger than the one relative to the help with housing at the time of marriage, it must be underlined that the current monetary help from parents involves, in each year, a significantly smaller fraction of the population (2.4% vs 31.1%). In Section 5.2 we also discuss the relation between housing help and current economic transfers.

One concern is that parents may have supported their children with other transfers around the time of marriage, for instance by simply transferring them some money. Unfortunately, the questionnaire is not designed to pick up this alternative. The problem is that the dummy variable *Help with house* may actually capture only the actual use of the transfer (for housing), not the fact that a transfer took effectively place. We believe this is not necessarily a concern. First of all, we have already shown that the housing help at the time of marriage appears to be quite relevant among inter-vivos transfers, hence our dummy is likely to be at least a very good

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[10]Results for the sub-sample with stronger care needs (e.g. older parents) can be found in Appendix B.

[11]The regression in column (3), run only on 1998 and 2003, gives a similar positive and significant coefficient.

proxy for the presence of an actual transfer. Second, we would expect a positive relation also between other forms of economic assistance from the parents to the adult children and in-kind services from the latter generation. If this is the case, we are potentially underestimating the effect of housing transfers, given that also some of the couples in the comparison group may have received assistance in the past. Therefore our results would still support our conclusions. We also check whether results would be sensibly different if we exclude those cases in which the couple may have simply not found it optimal to acquire a house, by excluding those who went to live in a rented flat and those who moved in a house that was already owned by one of the partners. Estimates are very similar (0.020 with s.e. 0.008).

Table 4: ICP (informal care provided to parents or in-laws) - Intensity

Dependent variable	(1) ICP Number of times	(2) ICP Less intensive	(3) ICP More intensive	(4) ICP Soft	(5) ICP Hard
Help with house	0.112**	0.017***	0.009	0.009**	0.012**
	(0.057)	(0.006)	(0.006)	(0.004)	(0.005)
Observations	15617	15617	15617	15617	15617
R^2	0.060	0.024	0.104	0.030	0.083

Note: * p<.10 ** p<.05 *** p<.01. In column (1), we estimate the model using Poisson where the dependent variable is the number of times the adult couple provide ICP to parents or in-laws (R^2 should be intended as the Pseudo R2). Columns (2) to (5) are estimated by OLS. In columns (2) and (3), less (more) intensive ICP is equal to 1 for the adult couple who provide less (more) than 13 hours in the last 4 weeks of elderly care to parents or in-laws. In column (4) and (5), we define as soft (hard) ICP when the adult couple provide the following services to the parents and in-laws: company and paper work (medical assistance, adult care and household chores). We include the full set of controls used for the main specification in Table 3, column (2). Robust standard error in brackets.

To conclude, Table 4 shows different measure of the intensive margins of the relation between past housing help and current care provision to the parents. The adult couple who has received the housing service at the time of marriage provide 11% more times elderly care with respect to the counterpart. Generally, the additional elderly care being provided seems to be less intensive (column 2 vs 3), where we define less intensive as a number of hours in the last 4 weeks lower than the median (13 hours). However, if we look at the type of care, we do not find any statistical difference between "soft" and "hard" elderly care (column 4 vs 5), where the former is defined as paper work and company while the latter is related to medical assistance, adult care and household chores.

4.2 Heterogeneity

Table 5 shows the results of the relation between past housing transfer and informal care distinguishing between earmarked monetary transfers to help the purchase or build a house and the in-kind help, where the older generation has donated the entire house. The coefficient on the latter is slightly larger (0.029 vs 0.022), but the difference is not statistically significant (column 1). Another important heterogeneity is that, in some cases that we included in the in-kind transfer, the house was only made available for free (or for a small sum), without

giving the property rights to the children.[12] We expect this type of help, which accounts for one fourth of the total help with house, to be more strongly related to ICP. The reason is that the parents still have some power to evict their adult children from the house, even if this possibility is limited by social and legal constraints. We also run the main regression by splitting the *Help with house* dummy to separate this kind of help. In line with our a-priori, it displays a stronger coefficient (0.057, s.e. 0.018). The effect of the other forms of *Help with house* is, nevertheless, still in line with the main results (0.020, s.e. 0.008).

Table 5: LPM for ICP (informal care provided to parents or in-laws) - Heterogeneity

Dependent variable	(1) ICP	(2) ICP	(3) ICP	(4) ICP^{wife}	(5) $ICP^{husband}$	(6) $ICP^{wife}_{parents-inlaws}$
Help with house		0.027***	0.026***	0.027***	0.007	
		(0.010)	(0.008)	(0.007)	(0.006)	
Monetary help	0.022*					
	(0.012)					
In-kind help	0.029***					
	(0.009)					
HwH $*$ South		-0.002				
		(0.014)				
HwH $*$ Yes voting			0.000			
			(0.001)			
$HwH_{parents-inlaws}$						0.019***
						(0.006)
Observations	15617	15617	15617	15617	15617	11829
R^2	0.090	0.090	0.090	0.087	0.075	0.072

Note: * p<.10 ** p<.05 *** p<.01. ICP^{wife} ($ICP^{husband}$) refers to ICP provided by the wife (husband) to either parents or in-laws. $ICP^{wife}_{parents-inlaws}$ is the difference in ICP to the two sides of the older generation, but referring only to the assistance provided by the wife. Yes voting is the percentage of "yes" votes by region at the Italian divorce referendum (1974), rescaled by subtracting its mean. We include the full set of controls used for the main specification in Table 3, column (2). Robust standard error in brackets.

A different issue relates to the fact that, according to Banfield (1958) and Putnam (1993), the different systems of government that ruled the pre-unification Italian states led to different civic and solidarity attitudes. This heterogeneity has been shown to have persisted through time, with the South still being characterized by a "lack of social trust outside the strict family circle" (Guiso et al., 2004, p. 526). In order to check whether we obtain different results depending on the different exposure to this "amoral familism", we conduct two tests. First, we simply interact the past housing transfer with a dummy that indicates the regions in the South of Italy that, in theory, should be more exposed to famililism. The result in column (2) shows almost no difference between the two areas in the relation between past help and the current provision of elderly care. Second, we focus on the familialism values interacting our main variable with the percentage of "yes" votes by region at the Italian divorce referendum (1974). Voters were asked whether they wanted to repeal a government law passed three years earlier allowing divorce for the first time in modern Italian history.

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[12]Indeed, those with *Help with house* equal to one are much more likely, at the time of the survey, to live in a house which does not belong to them but for which they do not pay the rent (26.5% in the sample of those who received help with house vs 7.0 for those who did not). The difference in the proportion of those who live in their own house is, instead, much smaller (70.0 vs 69.4).

Those voting "yes" wanted to outlaw divorce as had been the case before the law came into effect, and those voting "no" wanted to retain the law and their newly gained right to divorce. The referendum was defeated thus allowing the divorce laws to remain in force. Also in this case, the results are stable and the interaction term is a precisely estimated zero.

Insofar we analysed the couple as a single unit. If we split the two partners, we find out that the main result is driven by wives (column 4 vs 5), as expected given that women are usually more likely to be providing care. Nevertheless, the mechanism is not limited along the matriarchal line. Wives tend to provide more care to the side of the older generation that provided help, if only one of them did so (column 6).

4.3   Robustness checks

We carry out several robustness checks (full results are available on request). To start, we control for two additional sets of dummies accounting for family contacts. The idea is to capture some observable family ties which may bias our results, and to check whether the results on the exchange of caregiving is actually capturing a simple increase in the number of visits. One of the two sets of additional variables refers to the (categorical) frequency of phone calls (separately for parents and in laws). The other accounts for how often the two generations meet together. In both cases the variables assume six distinct categories: every day, more than once a week, once a week, a few times in a month (less than 4), a few times per year and never. The main results are not affected by the inclusion of these dummies, suggesting that the relation is not simply driven by family tastes or increased contacts.

Next, we add two dummies to account for the fact that some individuals had already left the parents' house before marriage. One is a dummy for adult children who were already living in a different house, while the other is equal to one for those who had already had at least one paid job at that time (more than 50% of the sample). Both are meant to capture the possible endogeneity of parental help with housing with respect to employment and residential status before marriage. The estimated coefficients of interest are, again, virtually unaffected.

Moreover, we check whether the coefficients of interest are somehow biased by the choice of a linear specification. We run the main regressions by using a Probit, but in all cases the Average Marginal Effects are practically indistinguishable from OLS coefficients.

Last but not least, although all regressions include the partners, parents and in-laws' age, together with wave dummies, cohort effects may bias the results. We statistically test for the presence of this effects both with respect to age and to the year of marriage. We set age groups every ten years from 1930 to 1980, and we do similarly in the case of year of marriage from 1956 to 2009. In both cases we add these cohort dummies as additional regressors and we test the joint significance of the parameters. In both scenarios the p-values are larger than 0.6. Results are similar in case of a five years selection. It seems safe to conclude that, once we account for all sets of covariates, the cohort effects are not statistically different from zero. Related to this concern, we also replicate the main regressions by using standard errors clustered at combination between year of marriage and region of residence. The results are

still statistically significant.

5 Possible motivations

Subsequently, we present four pieces of evidence that are more in favour of exchange and self-interested motives rather than altruism.

5.1 Do parents consider the cost of the transfer?

In order to study how parents react to economic factors that may influence their transfer choice, we regress *Help with house* on *House price* and the whole set of variables. As discussed in Section 2, both a bilateral altruism model and Cox's (1987) model with an imperfectly altruistic parent predict a positive relation. Differently, a negative relation is consistent with models based on non-cooperative and non-altruistic agents, such as Cox and Stark (2005) and Cigno et al. (1998), where the investment on children buys old-age security. Table 6, column (1) shows that when house prices at the time of marriage are higher, children are less likely to receive help in purchasing their first house. The opportunity cost of the transfer seem therefore to be more important than the fact that children may be more in need of help, at least on average. The effect is not negligible: considering that a standard deviation in house prices is 567 euro/sqm, an increase of this magnitude would lower the probability of receiving housing help at marriage by 2.5 percentage points, which is slightly more than one tenth of the proportion of households that actually received it.[13]

House price varies across regions and year of marriage, but in the regression we use only the within region variation, as we include regional fixed effects.[14] We find it more credible to focus only on this source of variation because house prices are lower and have increased less in Southern regions, where the degree of familism is higher and formal care is less available (as already discussed in Section 4.2). Nevertheless, there may be a strong autocorrelation over time within region, and therefore the correct standard errors should account for this clustering. However, there are only 19 distinct regions in the data.[15] As discussed by Cameron and Miller (2015), clustered standard errors are likely to be distorted when the clusters are few. We therefore calculate p-values implementing the wild-bootstrap method that they propose.[16] In all cases the coefficient is statistically significant at the 5%

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[13]In order to further check whether our estimates are simply capturing a switch between different forms of assistance, we tried excluding those couples for which it might have been anyway less convenient to acquire a house, namely those who moved in a rented flat or in a house already owned by one of the partners. The result is stronger and still shows a negative relation between house prices and the help with house.

[14]We get similar results in terms of magnitude when rescaling the housing prices by the consumer price index in order to account for inflation.

[15]In the Multipurpose Survey, the Aosta Valley region is aggregate with Piedmont (the Italian regions are 20). Given that the latter is much larger and populated, we always use only its price level.

[16]We thank Claudio Labanca for sharing with us his code for calculating wild bootstrap p-values. We took inspiration from it and from Cameron and Miller (2015). We also inspected the distribution of t-tests generated and we never found particular problems, such as mass points around particular values or missing values. We finally tried with a more standard pair bootstrap, but p-values tend to be smaller than the one obtained using clustered s.e., which is in line with the poor performance of this method when clusters are few.

level.

Table 6: Help with house, house prices and informal care

Dependent variable	(1) Help with house	(2) ICP	(3) Help with house	(4) ICP
House price (1000 euro × sqm)	-0.044	-0.031	-0.076	-0.036
P-value (robust)	0.001	0.016	0.000	0.008
P-value (cluster region)	0.009	0.045	0.000	0.041
P-value (wild bootstrap)	0.021	0.086	0.000	0.095
Sample	All		No monetary help	
Observations	14744	14744	13309	13309

Note: in each column, p-values refer to the null that the coefficient associated with the *House price* is equal to zero. All regressions are estimated by OLS and include wave, region dummies, plus demographic characteristics and wealth characteristics, as in Table 3, column (2). The sample excluded observations for which we do not have regional house prices for the relative year of marriage. Bootstrap p-values are calculated using 999 replications.

As before, one concern could be that house prices do not necessarily affect the parents' decision about giving economic assistance, but simply their specific choice about helping their children with housing instead of giving them a general (non-earmarked) monetary transfer. To shed light on this issue, we can check whether the estimate is driven by in-kind housing help rather than earmarked transfers, because in the in-kind case it is more likely that the parents already owned the property (although not necessarily, see Section 3.1) and therefore the house prices at the time of marriage constitute the relevant opportunity cost (to be compared with the future gains from informal care). We built the categorical variable Type of help as:

$$
\textit{Type of help} = \begin{cases} 0 \text{ if Help with house} = 0 \\ 1 \text{ if Earmarked monetary transfer for housing} = 1 \\ 2 \text{ if In-kind help with housing} = 1 \end{cases} \tag{2}
$$

and we run a multinomial logit regression, using the category *no help* as a baseline and adding all the regressors, plus *House price*. The latter is statistically significant only for the in-kind help outcome. Furthermore, in column (4) of Table 6 we exclude from the sample those who received a monetary help. The comparison is, therefore, only between couples who were helped with an in-kind transfer and those for which Help with house equal to zero. In this last case, the association with house prices is much stronger.

Our results are more consistent with Cox and Stark (2005) and Cigno et al. (1998) models, rather than with the purely or imperfectly altruistic ones. If the negative relation holds for the entire population and these models also justify the relation with ICP provided years later, then we expect that the negative relation translates to informal care as well.[17] In Table 6, column (2), we show the regressions of ICP on house prices. The estimated effect of *House price* is negative and this is confirmed in column (4) and statistically significant at the

[17]Notice also that if parents are simply switching to other transfers when house prices are higher, then we would expect no difference from the point of view of the adult children, who is anyway still receiving help. Therefore we would foresee no impact of past house prices on the current provision of informal care.

10% level also using the wild-bootstrap s.e. Obviously, this negative relation is in line with the theory only as far as it is not driven by other unobserved heterogeneity influencing both house prices and ICP. The first concern is that house prices are lower in regions with more familism and lower offer of formal care, but as already mentioned this should be accounted for by regional dummies. Another important issue is that prices may be related to other characteristics, and in particular to family wealth. However, our regressions include a full set of controls for current wealth, as expressed by the possession of a list of durable goods, and a quite good proxy of life-time wealth, as expressed by the partners' occupation and education, and by the parents and in-laws education and occupation when the currently adult children were aged 14. Another problem is that we do not know the region of origin, but only the current one (except for the 2003 wave, which does not provide enough observations to detect a result). This is likely to reduce the power of the relation, although it is hard to predict whether and how this could bias the result. Nevertheless, although a significant fraction of the couples lives in a different town than their parents, most of them live within 50 km (see Figure 1).

If the population of parents is heterogeneous in motives, the relation between house prices and the help with house is likely to be non-monotonic (Angrist and Pischke, 2009), with some subgroups providing less help when prices are higher (group A), and others the opposite (group B). If this is the case, our estimate is likely to capture only the prevalent motive, as it averages across these different subgroups. The average, however, will depend both on the size of the different groups and on the intensity of the (within-group) relation of house prices with house help, hence it is difficult to say which group is larger in the population. In this case it is even more difficult to give an interpretation to the relation between house prices and informal care. Suppose that the relation between *Help with house* and ICP, as expressed by the coefficient on *Help with house* in eq. (1), is also different in the two groups (say β_1^A and β_1^B). Then the coefficient on *House prices* in the regression for ICP will be a weighted combination between the two, where the β_1^A enters negatively (house prices reduce the housing help) and β_1^B positively. As long as both β_1^A and β_1^B are positive, then the sign of the estimated coefficient in columns (2) and (4) should be negative (unless β_1^B is large enough) as we find. However, if they are both negative and β_1^B is large enough, then the estimated coefficient might still be negative. This latter situation, which would be in line only with the bequest motive, seems at odd with the other results, but it is important to acknowledge that it would still be consistent with the estimates in columns (2) and (4).

5.2   Is housing help only a signal for future transfers?

Parents might have used the housing transfer to signal to their children the possibility of further financial transfers, closer or contemporary to the time in which they need informal care. In Table 7, column (1) we focus on the dummy variable *OH*, which is equal to one if the couple received further transfers from parents or in-laws during particular moment of economic distress, after the time of marriage and up to the interview.

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Table 7: LPM for further transfers

Dependent variable	(1) OH	(2) Contemp. Monetary
Help with house	0.011**	0.002
	(0.005)	(0.003)
Observations	11829	11829
R^2	0.056	0.065

Note: * p<.10 ** p<.05 *** p<.01. OH is a dummy equal to 1 for the adult couple who receive future (with respect to the time of marriage) other type of help from parents or in- laws. Both dependent variables are not available for the 2009 wave. We include the full set of controls used for Table 3, column (2). Robust standard error in brackets.

The relation with past help with house is non negligible, considering that only approximately 7% of the couples in the sample received this other support from parents or in-laws. This is in line with the idea that parents may use the housing transfer to signal their future wealth availability or some residual family resources to support the adult child. Nevertheless, this is not likely to be the main explanation for the association between housing help and ICP. For instance, for it to explain 10% of the effect (that is 0.26 percentage points), we would need these further transfers to increase the likelihood of providing ICP by around 24 percentage points (0.0026/0.011), a much larger effect than the one found for help with house itself. In column (2) we focus on the relation with a dummy for contemporary monetary help from the older generation (*Contemp. Monetary Help*). The estimate is very small in size and not statistically different from zero, confirming that our main result is not driven by the association of past housing help with further financial transfers.

An alternative but related explanation could be that housing help at marriage is an anticipation of future bequests. In this case, the intertemporal exchange is guaranteed by adult children expectations of larger returns in the future, after the provision of elderly care. Unfortunately, our data do not contain information on bequest expectations. To the best of our knowledge, only the Survey of Health, Ageing and Retirement in Europe (SHARE) contains such information. However, its structure and the available information is quite different from the *Multiscopo*. It is, therefore, beyond the scope of the present work to exploit SHARE to provide results about this channel. Furthermore, in Italy the succession law prescribes some minimum shares for each possible heir, in particular for children and partners. There is, therefore, limited scope for a strategic use of bequests, because parents cannot promise to write a strongly unequal will.

5.3 Is it only an exchange with geographical proximity?

An important mechanism explaining the result is the fact that those who received help with housing are more likely to live closer to their parents, as already shown by Tomassini et al. (2003). This could imply that the actual exchange is not with future assistance, but with geographical proximity, as argued by Coda Moscarola et al. (2010). Furthermore, if the positive association does not hold for those living far away, it is more likely that the intergenerational agreement is enforced through social control, which we expect to decrease with distance. This

would support one of the key assumptions underlying Cox's (1987) model. Individuals are also asked about the distance between their residence and that of their parents at the time of the interview. The information is reported as a categorical variable, as reported in Figure 1. For each partner we define the distance to parents as the minimum distance from either the mother or the father, in case they live apart. At the couple level we define distance as the minimum between parents and in-laws.

Figure 1 reproduces the result by Tomassini et al. (2003), by first fitting a set of linear probability models for each distance dummy (at the level of the couple) on help with housing and all the other covariates, and then predicting the two counterfactual probability distribution for the overall sample (assuming, respectively, that nobody received help and that everybody did).[18] Receiving help is associated with a strong increase in the chances to live in the same building, and a decrease in the other distances. Nevertheless, most of the decrease in probability mass associated with other categories is related to those within 16 km of distance.

Figure 1: Predicted distribution of current distance to parents or in-laws by help received with housing transfer at the time of marriage, LPM fits, Multiscopo 1998/2003/2009
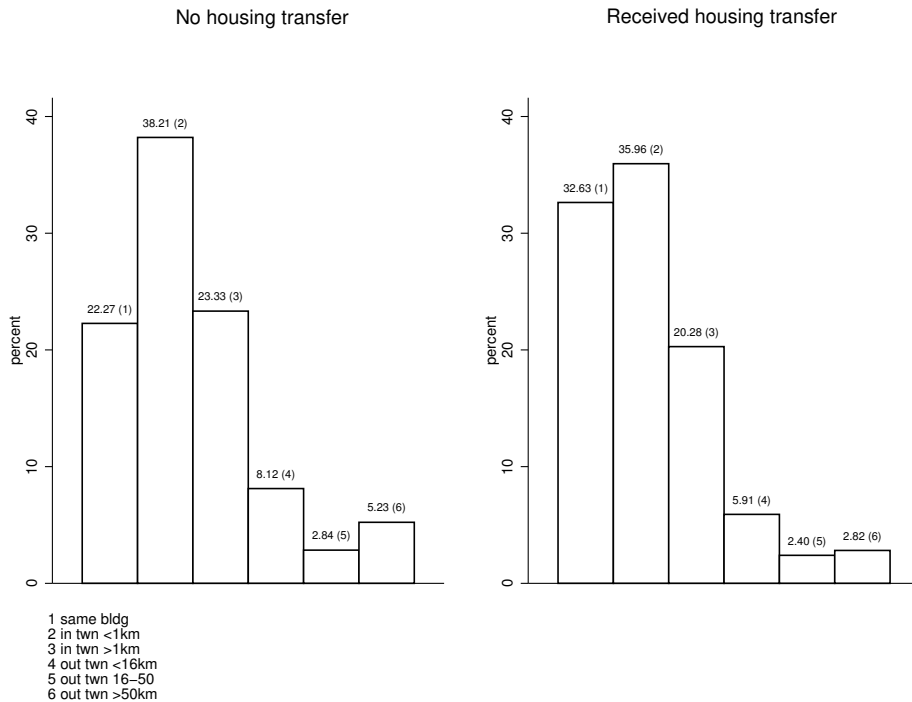
Table 8, column (1) shows a regression of ICP on distance dummies, which is defined as the minimum distance from parents or in-laws. Although geographical distance is generally associated with less parental care, the negative effect of distance becomes substantially large only when adult children are located further than 16 km away. Using the predicted changes in the geographical distribution (Figure 1) we can also calculate that around 0.7 percentage

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[18]Each distance bar is the average fitted probability across the whole sample, fixing the *Help with house* dummy either to 0 or 1.

points of the effect, approximately one fourth, can be explained by increased proximity.

Table 8: LPM for ICP with distance controls

Dependent variable	(1) ICP	(2) ICP	(3) ICP	(4) ICP
Help with house		0.019**	0.022	0.019**
		(0.008)	(0.021)	(0.008)
Minimum distance				
In town <1km	-0.003			
	(0.009)			
In town >1km	-0.027**			
	(0.010)			
Out town <16km	-0.058***			
	(0.014)			
Out town 16-50	-0.117***			
	(0.018)			
Out town >50km	-0.179***			
	(0.013)			
Distance dummies				
Parents: in town <1km				0.009
				(0.012)
Parents: in town >1km				-0.034***
				(0.012)
Parents: out town <16km				-0.024*
				(0.013)
Parents: out town 16-50				-0.059***
				(0.014)
Parents: out town >50km				-0.090***
				(0.014)
In-laws: in town <1km				-0.013
				(0.011)
In-laws: in town >1km				0.004
				(0.011)
In-laws: out town <16km				-0.028**
				(0.013)
In-laws: out town 16-50				-0.032**
				(0.015)
In-laws: out twn <50km				-0.094***
				(0.013)
Sample	All	Within town	Outside town	All
Observations	15617	13329	2288	15617
R2	0.099	0.095	0.193	0.101
Waves, regions	X	X	X	X
Demographic characteristics	X	X	X	X
Wealth characteristics	X	X	X	X

Note: * p<.10 ** p<.05 *** p<.01. We include the full set of controls used for the main specification in Table 3, column (2). Robust standard error in brackets.

An alternative way to understand what fraction of the effect can be explained by geographical proximity would be to condition the regressions on distance. If there is no selection on unobservables relative to distance, this strategy should recover the conditional effect of interest (see Cutler and Lleras-Muney, 2010, for an example in a different context). Hence we would expect no significant effect in the case in which the overall (unconditional) results were simply driven by increased proximity. Columns (2) and (3) split the sample between those who live within 16 km and those who live further apart. The coefficients are very similar in

magnitude. They are significant only when we focus on the sample of individuals who live closer to their parents or in-laws. However, the sample size for those living further away is quite small and a proper Wald test cannot, anyway, reject the null that the coefficients in the two subsamples are equal. Column (4) repeats the main regression, but including the whole set of dummies for distance (in this case separately for parents and in-laws) along with the explanatory variable of interest ICP.[19] Comparing the coefficient on *Help with house* in the last column with the main estimate in Table 3, we can say that around 25% of the relation between help with housing and informal care to parents seems to be driven by proximity.

Conditioning the regression on distance is actually problematic if housing help modifies the composition of unobservable characteristics in groups living at the same distance. Specifically, one may consider only two categories of distance, close ($D_i = 1$) and far ($D_i = 0$). The mean regression conditional on distance becomes

$$
\begin{aligned}
E[ICP_i | HwH_{i,tm}, X_i', D_i = d] = \tilde{\beta}_0 + X_i' \tilde{\delta} + \\
(\beta_1 + E[\varepsilon_i | HwH_{i,tm} = 1, X_i, D_i = d] - E[\varepsilon_i | HwH_{i,tm} = 0, X_i, D_i = d]) HwH_{i,tm}.
\end{aligned} \quad (3)
$$

The coefficient on *Help with house* (HwH here) includes, therefore, a selection term which accounts for the different unobservable ability or preference in providing elderly care between those who live at a certain distance and received help with housing and those who live at the same distance and did not receive help. Clearly this bias eventually includes also all the endogeneity problems that affect the regression not conditional on distance, which have already been discussed before and addressed in Sections 4.1 and 5.1.

Nevertheless, this selection term may be different from zero even if $E[\varepsilon_i | HwH_{i,tm}, X_i'] = E[\varepsilon_i | X_i']$, that is even if the two groups are similar in terms of unobservables (unconditionally with respect to distance but conditionally on other observables). This may happen if, among those who actually received help, only a subgroup characterised by higher (or lower) propensity to care selects into living closer to the parents. We can try to give a sign to this selection term reasoning in an intuitive model where the amount of care provided depends only on geographical distance D_i and the individual unobservable willingness to provide elderly care (as summarized by ε_i) (see Konrad et al., 2002, for a formal model). In this case there should be a threshold $\bar{\varepsilon}$ such that those with $\varepsilon_i < \bar{\varepsilon}$ should locate further away ($D_i = 0$), conditionally on labour market opportunities and other characteristics (captured by covariates X_i). Assuming that parents act strategically, as argued in Section 5.1, we would expect them to be more likely to help with a house located nearby. This is also in line with the evidence just discussed on the effect on geographical proximity. Therefore, as far as the gift is large enough to compensate for the increased cost of ICP, the threshold $\bar{\varepsilon}$ gets smaller, moving closer to the parents some individuals whose ε_i is in the middle of the distribution. This implies that,

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[19]We could also include the distance to parents at the time of marriage. However, we statistically test the joint significance of the dummies and we conclude that we cannot reject H_0 with a F-test with prob(0.28).

among those who received the help, there is a decrease in the average ε_i within each distance group. Therefore the estimates conditional on distance should have a downward bias, which is reassuring given that our results still reveal a positive effect of housing help on ICP.

Overall, we can conclude that the distance mechanism appears to be relevant, but it does not seem to be the only explanation.

5.4 Are (grand)parents facilitating the presence of a third generation?

Both in the "demonstration effect" model proposed by Cox and Stark (2005), and in the family constitution one advanced by Cigno (2006), parent housing help can be interpreted as an investment in the family network, which will increase the care that they will receive in the future. However, this investment will provide a return only if there is a third generation.

Table 9: LPM for the probability of having at least one child and ICR

Dependent variable	Child in/out HH				ICR	
	(1)	(2)	(3)	(4)	(5)	(6)
Help with house	0.007		0.011		0.063***	
	(0.006)		(0.008)		(0.010)	
Monetary help		-0.007		-0.011		0.028*
		(0.010)		(0.013)		(0.015)
In-kind help		0.015**		0.023**		0.081***
		(0.007)		(0.009)		(0.012)
Sample	All sample		Women aged<40		Co-resident child aged < 14	
Observations	15617	15617	9309	9309	10066	10066
R^2	0.148	0.148	0.212	0.212	0.167	0.168

Note: * p<.10 ** p<.05 *** p<.01. The dependent variable Child in/out HH in columns (1)-(4) is a dummy that takes value 1 if the adult couple has at least one child in or outside the household (87.6% in the sample). The dependent variable in columns (5)-(6) is a dummy ICR equal to one if the young offspring (aged less than 14) of the couple are at least sometimes looked after by a grandfather or grandmother. The age threshold of 14 is due to questionnaire design. In columns (5)-(6) we restrict the sample to all the individuals with at least a co-resident child aged less than 14. In all columns we include the full set of controls used for the main specification in Table 3, apart from columns (1)-(4) which exclude those relative to the presence of offspring in the household. Robust standard error in brackets.

In Table 9 we find a positive weak correlation between the receipt of a past housing transfer and the probability that the couple has at least a child, living in the household or elsewhere. This correlation is still positive when we include the full set of controls, but it becomes smaller and not statistically significant. We observe, however, quite different effects for the "Monetary" and the "In-kind" help. The former is never significant at any conventional statistical level while the latter appears strongly and positively related with the probability of having at least a child.[20] These results suggest that in-kind intergenerational transfers increase, *de facto*, the likelihood to "produce" grandchildren. This is particularly true if we focus on younger women, aged less than 40, so that help with house may also lead to anticipate the decision of having children. In the last two columns of Table 9, we show that those parents who provided help with house are also more likely to currently help with

---

[20]We presumably underestimate the fertility effect because the question ("how many children alive/adopted do you have?") is asked only to people over 25 years old.

grandchildren. When we control for all covariates the effect is still quite large, given that the proportion of couples receiving help with grandchildren is 48% in the selected sample.[21]

Table 10: LPM for ICP for couples with or without children

Dependent variable	(1) ICP	(2) ICP	(3) ICP	(4) ICP	(5) ICP	(6) ICP
Help with house	0.013	0.018	0.033*	0.025*	0.084	0.083
	(0.008)	(0.022)	(0.020)	(0.013)	(0.067)	(0.055)
Help with house X Child in/out HH			-0.021			-0.059
			(0.021)			(0.057)
Observations	13677	1940	15617	6603	401	7004
R^2	0.024	0.053	0.024	0.023	0.158	0.023
Child	Yes	No	All	Yes	No	All
Mother's age	All	All	All	> 39	> 39	> 39
Waves, regions	X	X	X	X	X	X
Demographic characteristics	X	X	X	X	X	X
Wealth characteristics	X	X	X	X	X	X

Note: * p<.10 ** p<.05 *** p<.01. The variable Child in/out HH in columns (3) and (6) is a dummy that takes value 1 if the adult couple has at least one child in or outside the household (87.6% in the sample). We include the full set of controls used for the main specification in Table 3, plus in columns (3) and (6) the dummy Child in/out HH. Robust standard error in brackets.

Both results suggest that parents who provided help with house seem to try to facilitate the presence of a third generation, which is in line with both the demonstration effect and the family constitution models. Given that the presence of a young generation that will provide assistance in the future is crucial for both theories, in Table 10 we discuss whether our main finding is limited to the subgroup with living children. Although results tend to be highly imprecise due to small sample size, the relation in the subgroup without living children seems actually to be at least as large as in the other group.[22] Results are similar if we split the sample between those with coresident children and those without. One counterargument is that the family constitution does not require young children to be currently present, as it is only necessary that the middle generation expects a younger generation to assists them in the future. Nevertheless, the last columns of Table 10 focus only on the subsample of wives aged 40 or more, for which it is less likely to have other children in the future. Results are, again, highly imprecise, but still suggest that the positive relation is, if nothing, larger in the sample without children. This indicates that a single motive is not prevailing in this context.

6   Conclusions

In this paper we contribute to the debate about the economic rationale behind unpaid assistance to aging parents. Using data from three waves (1998, 2003 and 2009) of the Italian Multipurpose Survey, we show a positive effect of downstream housing help received in the past on current informal elderly care. The two generations seem, therefore, to be able to

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[21]If we add dummies for distance from parents and in-laws, which are strongly negatively correlated with *ICR*, the coefficient on help received from parents shrinks to 4.6 percentage points and it is still statistically significant at the 1% level.

[22]The results are unchanged once we control for the geographical proximity to parents and in-laws.

avoid the prisoner dilemma in which neither financial transfers nor elderly care are provided.

Our main result can be explained by different motives, including standard versions of the altruistic and exchange models. In the exchange case, the informal agreement between generations needs to be enforceable over time in order to explain our results. One possible explanation is that parents who provided a housing transfer are more likely to provide further financial transfers in the future, hence help with housing should be understood as a signal of the availability of intergenerational help. In this case, inasmuch as the adults assume to receive more in the future, they may be more willing to currently assist their parents. However, we show that empirically this channel seems to influence only marginally our main result. Another possibility is that the actual exchange occurs between housing help and geographical proximity, which decreases the cost of care and increases social control, leading to a higher likelihood of informal care. However, perhaps surprisingly, only a fraction of the relation is explained by this channel, as the empirical association between past help and current care persists even for children living further away.

The decision to provide help with housing at the time of marriage seems also to be negatively related to regional house prices, in particular with respect to in-kind transfers. The negative relation translates into a lower likelihood of receiving informal care from the adult children. This suggests that parents take into account the opportunity cost of their help when they decide to enter in the implicit agreement. This is not in line with a purely altruistic model, nor with the prediction from Cox's (1987) model with an imperfectly altruist parent. Differently, it is in line with those models where the help provided to the children can be understood as an investment for the future, such as the demonstration effect of Cox and Stark (2005) and the family constitution of Cigno et al. (1998). Both of them predict that the return on this investment is guaranteed only if there is (or there will be for the family constitution) a third generation, the grandchildren. Indeed, we provide additional evidence that the housing help from parents is positive correlated with fertility and with them helping to look after grandchildren. However, we also show that the positive correlation is not driven only by couples who have children, but also by those who are childless or less likely to have children in the future.

To summarize, the evidence suggests that a single motive is not prevailing in the data, as also argued, for other countries and with other methods, by Arrondel and Masson (2006) and Park (2014). Although a simple model of altruism may explain some of the results, we show evidence that is more in line with different models based on exchange and, more in general, self-interest. In some families, the past housing help can be understood as a standard exchange with increased proximity. In other cases, the *quid-pro-quo* seems to be between quasi-contemporary transfers. Some families seem instead to understand the help as an investment in their future, following the rules of an unwritten constitution or the hope that the demonstration effect will take place.

With respect to the theoretical and empirical literature, our results point out that more attention should be devoted to past transfers, and not only to bequests and contemporary

inter-vivos exchange. The fact that different self-interested motives support the mutual pro-
vision of services and assistance in different point in life needs to be taken into account when
designing policies that may alter one of the two transfers. As pointed out by Cigno et al.
(1998), if the provision of public elderly care increases and reduces the future demand of help
from your own children, then the rate of return in investing in the younger generation de-
creases, thereby affecting early downstream transfers (such as housing). Similarly, if taxation
of intra-family donations increases the cost of providing economic help to adult children, then
parents may find it non-optimal to comply with the mutual assistance implicit contract, and
therefore we may expect them to receive less informal care in the future and, possibly, depend
more on public policy. The presence of mixed motives complicates the picture. As clearly
highlighted by the impure altruist model of Cox (1987), policy implications also depend on
the degree of substitutability between informal and formal care. For instance, a redistribu-
tive policy that (implicitly) transfers money from the older to the younger generation may as
well increase the quantity of the downstream transfers provided by parents to their children,
as long as the parents' demand for the future informal care service is sufficiently rigid. As
we find evidence of mixed motives, we cannot provide a comprehensive and neat picture of
the policy implications, which would require to model this heterogeneity. Nevertheless, our
findings suggest that a full assessment of different counterfactual policies should account for
the intertemporal exchange of transfers and services between the two generations. This can
be important for the design of structural models used to evaluate the impact of formal care
policies, which often involve a dynamic setting (see, for instance, Byrne et al., 2009; Barczyk
and Kredler, 2014).

One limitation of our study, also due to the survey design, is that we are not fully able to
study the differences between past tied transfers, such as the one we analyse, and other forms
of economic assistance. Some of the mechanisms that we discuss are relevant only for the
housing transfer, in particular the increased geographical proximity. Further research may
help to understand whether the positive relation with the current provision of elderly care
by the adult children carries over to other forms of past economic assistance provided by the
parents, and how this intertemporal exchange is enforced.

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Appendix A: Additional figures and tables

Figure A.1: Regional housing price (Euro/sq m) by year of marriage, Nomisma
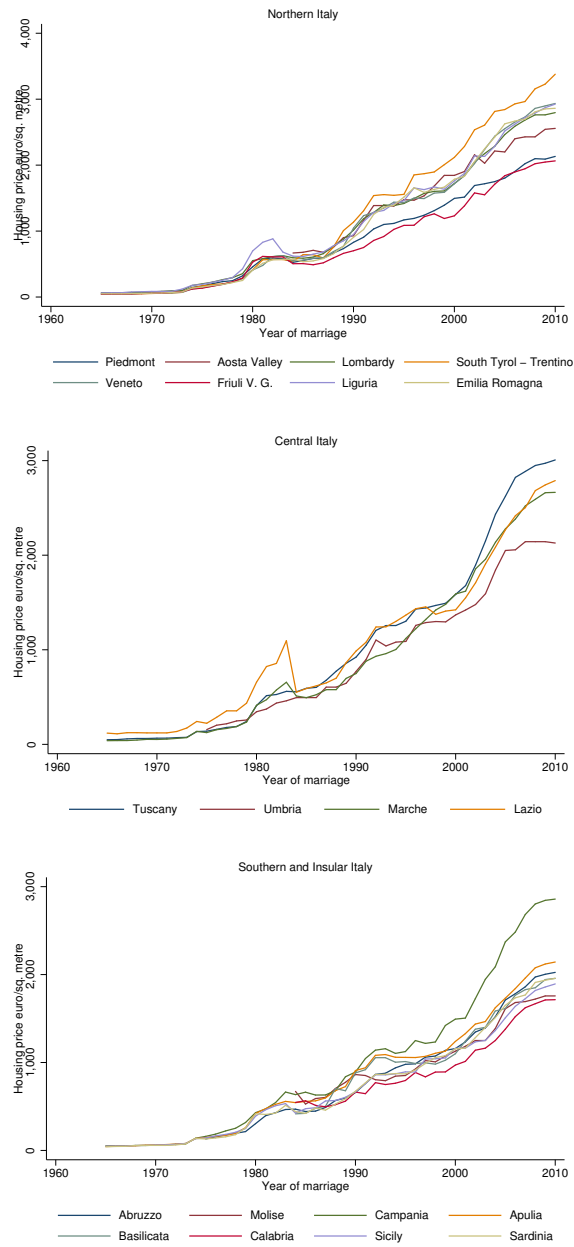
Table A.1: Summary statistics

Main variables	Mean	Std.Dev.	Min	Max
ICP	0.213	0.409	0	1
ICR	0.413	0.492	0	1
Help with house	0.304	0.460	0	1
Monetary help	0.095	0.293	0	1
In-kind help	0.210	0.407	0	1
Cohabitation	0.091	0.288	0	1
$ICP_{parents-inlaws}$	0.010	0.391	-1	1
$HwH_{parents-inlaws}$	-0.014	0.498	-1	1
Contemp. Monetary help	0.024	0.153	0	1
Number of times	2.672	8.237	0	180
Less intensive ICP	0.106	0.308	0	1
More intensive ICP	0.107	0.309	0	1
Soft ICP	0.039	0.193	0	1
Hard ICP	0.086	0.280	0	1
South	0.430	0.495	0	1
Divorce referendum	-2.27e-15	9.524	-15.952	16.747
$ICP^{wife}_{parents-inlaws}$	0.063	0.355	-1	1
ICP wife	0.158	0.365	0	1
ICP husband	0.120	0.325	0	1
Year				
1998	0.446	0.497	0	1
2003	0.311	0.463	0	1
2009	0.243	0.429	0	1
Regions				
Piedmont	0.090	0.286	0	1
Lombardy	0.089	0.285	0	1
South Tyrol - Trentino	0.048	0.214	0	1
Veneto	0.061	0.239	0	1
Friuli V. G.	0.032	0.175	0	1
Liguria	0.026	0.160	0	1
Emilia Romagna	0.051	0.220	0	1
Tuscany	0.054	0.226	0	1
Umbria	0.032	0.176	0	1
Marche	0.043	0.203	0	1
Lazio	0.045	0.206	0	1
Abruzzo	0.044	0.205	0	1
Molise	0.032	0.176	0	1
Campania	0.065	0.247	0	1
Apulia	0.077	0.266	0	1
Basilicata	0.033	0.178	0	1
Calabria	0.059	0.236	0	1
Sicily	0.078	0.268	0	1
Sardinia	0.042	0.201	0	1
Wife characteristics				
Age	39.000	8.035	20	68
None/elementary	0.100	0.300	0	1
Middle school	0.353	0.478	0	1
School of vocational	0.089	0.284	0	1
High school	0.341	0.474	0	1
Bachelor or more	0.117	0.321	0	1
No limitations	0.970	0.171	0	1
Limitations (sometimes)	0.024	0.153	0	1
Limitations (most of the time)	0.006	0.077	0	1
Has siblings	0.892	0.310	0	1

Table A.1: Summary statistics – continued

n. of siblings	2.089	1.753	0	20
Husband characteristics				
Age	42.242	8.303	20	69
None/elementary	0.102	0.302	0	1
Middle school	0.390	0.488	0	1
School of vocational	0.088	0.284	0	1
High school	0.314	0.464	0	1
Bachelor or more	0.106	0.307	0	1
No limitations	0.970	0.171	0	1
Limitations (sometimes)	0.022	0.148	0	1
Limitations (most of the time)	0.008	0.088	0	1
Has siblings	0.896	0.305	0	1
n. of siblings	2.192	1.818	0	20
Children characteristics				
Child	0.857	0.350	0	1
n. children	1.536	0.920	0	9
Age of the youngest child	8.046	7.745	0	39
Child in/out HH	0.876	0.330	0	1
Parents characteristics				
Only father alive	0.060	0.237	0	1
Only mother alive	0.284	0.451	0	1
Mother's age	0.000	9.208	-30.419	34.581
Father's age	0.000	7.471	-28.123	33.877
Father: no limitations	0.874	0.332	0	1
Father: limitations (sometimes)	0.082	0.275	0	1
Father: limitations (most of the time)	0.044	0.205	0	1
Mother: no limitations	0.843	0.364	0	1
Mother: limitations (sometimes)	0.108	0.311	0	1
Mother: limitations (most of the time)	0.049	0.216	0	1
Father: none/elementary	0.659	0.474	0	1
Father: middle school	0.176	0.381	0	1
Father: school of vocational	0.036	0.186	0	1
Father: high school	0.076	0.265	0	1
Father: bachelor or more	0.027	0.162	0	1
Father: does not remember	0.025	0.157	0	1
Mother: none/elementary	0.721	0.448	0	1
Mother: middle school	0.160	0.366	0	1
Mother: school of vocational	0.027	0.162	0	1
Mother: high school	0.060	0.237	0	1
Mother: bachelor or more	0.013	0.113	0	1
Mother: does not remember	0.019	0.136	0	1
In-laws characteristics				
Only father alive	0.068	0.252	0	1
Only mother alive	0.346	0.476	0	1
Age: mother	0.000	9.160	-28.507	31.493
Age: father	0.000	7.057	-29.477	30.523
Father: no limitations	0.871	0.335	0	1
Father: limitations (sometimes)	0.085	0.279	0	1
Father: limitations (most of the time)	0.043	0.204	0	1
Mother: no limitations	0.811	0.391	0	1
Mother: limitations (sometimes)	0.125	0.330	0	1
Mother: limitations (most of the time)	0.064	0.245	0	1
Father: none/elementary	0.690	0.463	0	1
Father: middle school	0.157	0.363	0	1
Father: school of vocational	0.032	0.176	0	1
Father: high school	0.067	0.251	0	1

Father: bachelor or more	0.023	0.151	0	1
Father: does not remember	0.031	0.173	0	1
Mother: none/elementary	0.741	0.438	0	1
Mother: middle school	0.148	0.355	0	1
Mother: school of vocational	0.025	0.156	0	1
Mother: high school	0.048	0.215	0	1
Mother: bachelor or more	0.011	0.105	0	1
Mother: does not remember	0.026	0.159	0	1
Household characteristics				
Rent	0.175	0.380	0	1
Own property	0.696	0.460	0	1
Usufruct	0.130	0.336	0	1
Type of house				
Cottage	0.089	0.285	0	1
Large house	0.091	0.288	0	1
Civil house	0.649	0.477	0	1
Social house	0.125	0.331	0	1
Rural	0.023	0.150	0	1
Improper home	0.003	0.056	0	1
Do not know	0.019	0.136	0	1
Items				
n. rooms	4.814	1.609	1	30
n. mobiles	1.658	1.295	0	9
n. TVs	1.828	0.875	0	9
n. motorcycles	0.114	0.367	0	7
n. cars	1.627	0.666	0	8
Occupation of parents				
Father: white collar	0.292	0.454	0	1
Father: blue collar	0.366	0.482	0	1
Father: clerical workers	0.257	0.437	0	1
Father: employed but does not remember	0.013	0.115	0	1
Father: unemployed	0.028	0.165	0	1
Father: dead	0.027	0.163	0	1
Father: does not remember	0.017	0.129	0	1
Mother: white collar	0.103	0.304	0	1
Mother: blue collar	0.113	0.316	0	1
Mother: clerical workers	0.124	0.330	0	1
Mother: employed but does not remember	0.009	0.095	0	1
Mother: housewife	0.622	0.485	0	1
Mother: unemployed	0.013	0.112	0	1
Mother: dead	0.005	0.067	0	1
Mother: does not remember	0.012	0.107	0	1
Occupation of in-laws				
Father: white collar	0.282	0.450	0	1
Father: blue collar	0.359	0.480	0	1
Father: clerical workers	0.274	0.446	0	1
Father: employed but does not remember	0.015	0.120	0	1
Father: unemployed	0.027	0.163	0	1
Father: dead	0.026	0.160	0	1
Father: does not remember	0.017	0.130	0	1
Mother: white collar	0.087	0.281	0	1
Mother: blue collar	0.101	0.302	0	1
Mother: clerical workers	0.125	0.331	0	1
Mother: employed but does not remember	0.009	0.096	0	1
Mother: housewife	0.647	0.478	0	1
Mother: unemployed	0.012	0.109	0	1

Mother: dead	0.005	0.068	0	1
Mother: does not remember	0.014	0.118	0	1
Occupation of the wife				
White collar	0.288	0.453	0	1
Blue collar	0.130	0.336	0	1
Clerical workers	0.100	0.300	0	1
Unemployed	0.039	0.194	0	1
Housewife	0.398	0.490	0	1
Retired	0.016	0.125	0	1
Student	0.029	0.167	0	1
Occupation of the husband				
White collar	0.318	0.466	0	1
Blue collar	0.304	0.460	0	1
Clerical workers	0.311	0.463	0	1
Unemployed	0.049	0.215	0	1
Retired	0.018	0.132	0	1
Wife's source of income				
Employed	0.418	0.493	0	1
Self-employee	0.100	0.300	0	1
Retirement	0.025	0.155	0	1
Benefits	0.009	0.096	0	1
Estate income	0.006	0.079	0	1
From family of origin	0.442	0.497	0	1
Husband's source of income				
Employed	0.621	0.485	0	1
Self-employee	0.274	0.446	0	1
Retirement	0.055	0.228	0	1
Benefits	0.014	0.116	0	1
Estate income	0.003	0.054	0	1
From family of origin	0.034	0.181	0	1
Phone contacts with parents				
Every day	0.440	0.496	0	1
More than once per week	0.318	0.466	0	1
Once per week	0.064	0.244	0	1
Less than 4 in a month	0.048	0.213	0	1
Sometimes over the year	0.020	0.139	0	1
Never	0.111	0.314	0	1
Visits to parents				
Every day	0.441	0.497	0	1
More than once per week	0.288	0.453	0	1
Once per week	0.104	0.305	0	1
Less than 4 in a month	0.088	0.284	0	1
Sometimes over the year	0.073	0.260	0	1
Never	0.006	0.077	0	1
Phone contacts with in-laws				
Every day	0.253	0.435	0	1
More than once per week	0.352	0.478	0	1
Once per week	0.088	0.283	0	1
Less than 4 in a month	0.086	0.280	0	1
Sometimes over the year	0.041	0.199	0	1
Never	0.180	0.384	0	1
Visits to in-laws				
Every day	0.415	0.493	0	1
More than once per week	0.285	0.451	0	1
Once per week	0.118	0.322	0	1
Less than 4 in a month	0.093	0.291	0	1

Sometimes over the year	0.083	0.276	0	1
Never	0.006	0.078	0	1
Total observations	15617			

Table A.2: Summary statistics: regional housing prices (euro/sq m), Nomisma

Region name	Region number	Available years	Mean	Std. Dev.	Min	Max
Piedmont	1	1965-2009	854.13	682.88	58.60	2132.14
Lombardy	3	1965-2009	1060.00	899.51	63.70	2796.10
South Tyrol - Trentino	4	1965-2009	1197.73	1092.49	43.68	3378.57
Veneto	5	1965-2009	1050.44	946.61	42.24	2934.69
Friuli V. G.	6	1965-2009	796.44	656.24	44.27	2064.29
Liguria	7	1965-2009	1095.16	912.50	62.71	2925.00
Emilia Romagna	8	1965-2009	1048.10	948.49	49.20	2861.91
Tuscany	9	1965-2009	1032.48	954.58	48.95	3007.14
Umbria	10	1975-2009	1042.22	656.41	156.01	2142.86
Marche	11	1965-2009	919.77	847.43	38.73	2664.29
Lazio	12	1965-2009	1030.66	810.46	111.41	2788.57
Abruzzo	13	1975-2009	911.64	581.36	130.74	2025.00
Molise	14	1984-2009	1086.29	396.25	527.52	1757.14
Campania	15	1965-2009	964.85	866.25	51.72	2858.57
Apulia	16	1965-2009	798.08	650.35	44.60	2142.86
Basilicata	17	1984-2009	1140.13	471.27	416.12	1957.14
Calabria	18	1984-2009	972.26	400.94	496.17	1714.29
Sicily	19	1965-2009	699.70	564.45	48.19	1893.65
Sardinia	20	1965-2009	708.81	598.79	41.54	1957.14

Table A.3: Linear probability model for ICP with all controls

	ICP	ICP
Help with house	0.026***	
	(0.008)	
Monetary help		0.022*
		(0.012)
In-kind help		0.029***
		(0.009)
Cohabitation	0.013	0.013
	(0.012)	(0.012)
2003	0.018*	0.018*
	(0.010)	(0.010)
2009	0.003	0.003
	(0.014)	(0.014)
Lombardy	-0.011	-0.011
	(0.015)	(0.015)
South Tyrol - Trentino	0.024	0.024
	(0.019)	(0.019)
Veneto	0.024	0.024
	(0.017)	(0.018)
Friuli V. G.	0.038*	0.038*
	(0.022)	(0.022)
Liguria	-0.030	-0.030
	(0.021)	(0.021)
Emilia Romagna	0.013	0.013
	(0.018)	(0.018)
Tuscany	-0.010	-0.009
	(0.017)	(0.017)
Umbria	-0.009	-0.009
	(0.021)	(0.021)
Marche	0.000	0.000
	(0.019)	(0.019)
Lazio	-0.048***	-0.048***
	(0.018)	(0.018)
Abruzzo	-0.028	-0.028
	(0.018)	(0.018)
Molise	-0.036*	-0.036*
	(0.021)	(0.021)
Campania	0.001	0.001
	(0.017)	(0.017)
Apulia	0.022	0.022
	(0.016)	(0.016)
Basilicata	0.002	0.002
	(0.021)	(0.021)
Calabria	-0.028*	-0.029*
	(0.017)	(0.017)
Sicily	-0.002	-0.002
	(0.016)	(0.016)
Sardinia	-0.016	-0.016

	(0.019)	(0.019)
Wife characteristics		
Age	-0.003**	-0.003**
	(0.001)	(0.001)
Middle school	0.025*	0.025*
	(0.013)	(0.013)
School of vocational	0.039**	0.038**
	(0.017)	(0.017)
High school	0.041***	0.041***
	(0.015)	(0.015)
Bacheor or more	0.037*	0.037*
	(0.019)	(0.019)
Limitation (sometimes) * 1998	-0.010	-0.010
	(0.048)	(0.048)
Limitation (sometimes) * 2003	0.087	0.086
	(0.064)	(0.064)
Limitation (sometimes) * 2009	0.017	0.017
	(0.029)	(0.029)
Limitation (most of the time) * 1998	-0.226***	-0.226***
	(0.039)	(0.039)
Limitation (most of the time) * 2003	0.095	0.095
	(0.120)	(0.120)
Limitation (most of the time) * 2009	-0.092	-0.092
	(0.060)	(0.060)
Brother	0.005	0.005
	(0.011)	(0.011)
# brothers	0.001	0.001
	(0.002)	(0.002)
Husband characteristics		
Age	0.001	0.001
	(0.001)	(0.001)
Middle school	0.014	0.014
	(0.013)	(0.013)
School of vocational	0.047***	0.048***
	(0.017)	(0.017)
High school	0.044***	0.044***
	(0.015)	(0.015)
Bacheor or more	0.058***	0.059***
	(0.019)	(0.019)
Limitation (sometimes) * 1998	-0.004	-0.004
	(0.059)	(0.059)
Limitation (sometimes) * 2003	-0.062	-0.062
	(0.060)	(0.060)
Limitation (sometimes) * 2009	0.075**	0.075**
	(0.031)	(0.031)
Limitation (most of the time) * 1998	-0.150***	-0.150***
	(0.051)	(0.051)

Limitation (most of the time) * 2003	0.049	0.049
	(0.111)	(0.111)
Limitation (most of the time) * 2009	-0.057	-0.057
	(0.052)	(0.052)
Brother	0.004	0.003
	(0.012)	(0.012)
# brothers	-0.010***	-0.010***
	(0.002)	(0.002)
Children characteristics		
Child	-0.048***	-0.048***
	(0.014)	(0.014)
# children	0.003	0.003
	(0.005)	(0.005)
Age of the youngest child	0.001	0.001
	(0.001)	(0.001)
Parents characteristics		
Only father alive	0.031**	0.031**
	(0.015)	(0.015)
Only mother alive	0.020**	0.020**
	(0.009)	(0.009)
Age: mother	0.002***	0.002***
	(0.001)	(0.001)
Age: father	0.002***	0.002***
	(0.001)	(0.001)
Father limitation (sometimes) * 1998	0.072***	0.072***
	(0.027)	(0.027)
Father limitation (sometimes) * 2003	0.084**	0.084**
	(0.037)	(0.037)
Father limitation (sometimes) * 2009	-0.020	-0.020
	(0.021)	(0.021)
Father limitation (most of the time) * 1998	0.177***	0.177***
	(0.032)	(0.032)
Father limitation (most of the time) * 2003	0.056	0.056
	(0.038)	(0.038)
Father limitation (most of the time) * 2009	0.070**	0.070**
	(0.027)	(0.027)
Mother limitation (sometimes) * 1998	0.082***	0.082***
	(0.024)	(0.024)
Mother limitation (sometimes) * 2003	0.083***	0.083***
	(0.031)	(0.031)
Mother limitation (sometimes) * 2009	0.055***	0.055***
	(0.020)	(0.020)
Mother limitation (most of the time) * 1998	0.197***	0.197***
	(0.030)	(0.030)
Mother limitation (most of the time) * 2003	0.228***	0.228***
	(0.036)	(0.036)
Mother limitation (most of the time) * 2009	0.160***	0.160***

	(0.030)	(0.030)
Father: middle school	-0.003	-0.003
	(0.011)	(0.011)
Father: school of vocational	0.037*	0.037*
	(0.020)	(0.020)
Father: high school	0.013	0.013
	(0.017)	(0.017)
Father: bacheor or more	-0.007	-0.006
	(0.025)	(0.025)
Father: No remember	0.021	0.021
	(0.031)	(0.031)
Mother: middle school	-0.017	-0.016
	(0.011)	(0.011)
Mother: school of vocational	0.001	0.001
	(0.023)	(0.023)
Mother: high school	-0.018	-0.018
	(0.019)	(0.019)
Mother: bacheor or more	-0.060*	-0.060*
	(0.032)	(0.032)
Mother: No remember	-0.055	-0.055
	(0.035)	(0.035)
In-laws characteristics		
Only father alive	0.046***	0.046***
	(0.014)	(0.014)
Only mother alive	0.026***	0.026***
	(0.008)	(0.008)
Age: mother	0.002***	0.002***
	(0.001)	(0.001)
Age: father	0.002***	0.002***
	(0.001)	(0.001)
Father limitation (sometimes) * 1998	0.065**	0.066**
	(0.026)	(0.026)
Father limitation (sometimes) * 2003	0.109***	0.109***
	(0.033)	(0.033)
Father limitation (sometimes) * 2009	0.009	0.009
	(0.019)	(0.019)
Father limitation (most of the time) * 1998	0.188***	0.188***
	(0.031)	(0.031)
Father limitation (most of the time) * 2003	0.121***	0.121***
	(0.038)	(0.038)
Father limitation (most of the time) * 2009	0.017	0.017
	(0.027)	(0.027)
Mother limitation (sometimes) * 1998	0.042*	0.042*
	(0.022)	(0.022)
Mother limitation (sometimes) * 2003	-0.017	-0.017
	(0.026)	(0.026)
Mother limitation (sometimes) * 2009	0.047**	0.047**
	(0.019)	(0.019)

Mother limitation (most of the time) * 1998	0.135***	0.135***
	(0.027)	(0.027)
Mother limitation (most of the time) * 2003	0.131***	0.131***
	(0.029)	(0.029)
Mother limitation (most of the time) * 2009	0.129***	0.129***
	(0.028)	(0.028)
Father: middle school	0.005	0.005
	(0.011)	(0.011)
Father: school of vocational	0.011	0.011
	(0.020)	(0.020)
Father: high school	0.035**	0.035**
	(0.018)	(0.018)
Father: bacheor or more	0.015	0.015
	(0.027)	(0.027)
Father: No remember	-0.030	-0.030
	(0.029)	(0.029)
Mother: middle school	-0.018	-0.018
	(0.012)	(0.012)
Mother: school of vocational	-0.008	-0.008
	(0.023)	(0.023)
Mother: high school	-0.037*	-0.037*
	(0.020)	(0.020)
Mother: bacheor or more	-0.011	-0.011
	(0.037)	(0.037)
Mother: No remember	0.017	0.017
	(0.032)	(0.032)
Household characteristics		
Rent	0.016*	0.016*
	(0.009)	(0.009)
Own property	0.030**	0.029**
	(0.012)	(0.012)
Large house	-0.014	-0.014
	(0.015)	(0.015)
Civil house	0.002	0.002
	(0.012)	(0.012)
Social house	-0.009	-0.009
	(0.015)	(0.015)
Rural	-0.004	-0.004
	(0.023)	(0.023)
Improper home	0.015	0.015
	(0.055)	(0.055)
Do not know	-0.021	-0.021
	(0.025)	(0.025)
# rooms	0.003	0.003
	(0.002)	(0.002)
# mobile	0.003	0.003
	(0.004)	(0.004)
# TVs	0.011***	0.011***

	(0.004)	(0.004)
# motorcycles	0.004	0.004
	(0.009)	(0.009)
# cars	0.009	0.009
	(0.006)	(0.006)
Occupation parents		
Father: blue collar	0.015	0.014
	(0.010)	(0.010)
Father: clerical workers	-0.013	-0.013
	(0.010)	(0.010)
Father: employed but don't remember	0.000	0.000
	(0.029)	(0.029)
Father: unemployed	0.018	0.018
	(0.022)	(0.022)
Father: dead	-0.022	-0.022
	(0.022)	(0.022)
Father: don't remember	-0.096***	-0.096***
	(0.026)	(0.026)
Mother: blue collar	-0.011	-0.011
	(0.016)	(0.016)
Mother: clerical workers	0.016	0.016
	(0.016)	(0.016)
Mother: employed but don't remember	0.002	0.002
	(0.040)	(0.040)
Mother: housewife	0.000	0.000
	(0.013)	(0.013)
Mother: unemployed	-0.028	-0.028
	(0.030)	(0.030)
Mother: dead	0.042	0.042
	(0.054)	(0.054)
Mother: don't remember	0.019	0.019
	(0.035)	(0.035)
Occupation in-laws		
Father: blue collar	0.013	0.012
	(0.010)	(0.010)
Father: clerical workers	0.010	0.010
	(0.011)	(0.011)
Father: employed but don't remember	-0.010	-0.010
	(0.029)	(0.029)
Father: unemployed	0.029	0.029
	(0.022)	(0.022)
Father: dead	0.004	0.004
	(0.022)	(0.022)
Father: don't remember	0.035	0.035
	(0.034)	(0.034)
Mother: blue collar	0.015	0.015
	(0.017)	(0.017)

Mother: clerical workers	0.031*	0.031*
	(0.017)	(0.017)
Mother: employed but don't remember	0.045	0.045
	(0.039)	(0.039)
Mother: housewife	0.009	0.009
	(0.013)	(0.013)
Mother: unemployed	-0.007	-0.007
	(0.032)	(0.032)
Mother: dead	-0.003	-0.003
	(0.052)	(0.052)
Mother: don't remember	-0.021	-0.021
	(0.039)	(0.039)
Occupation wife		
Blue collar	-0.014	-0.014
	(0.012)	(0.012)
Clerical workers	0.011	0.011
	(0.034)	(0.034)
Unemployed	-0.011	-0.011
	(0.058)	(0.058)
Housewife	-0.049	-0.049
	(0.057)	(0.057)
Retired	-0.073	-0.073
	(0.066)	(0.066)
Student	-0.045	-0.045
	(0.058)	(0.058)
Occupation husband		
Blue collar	-0.004	-0.004
	(0.009)	(0.009)
Clerical workers	-0.035	-0.035
	(0.041)	(0.041)
Unemployed	-0.089	-0.089
	(0.059)	(0.059)
Retired	-0.082*	-0.082*
	(0.048)	(0.048)
Wife source of income		
Self-employee	-0.025	-0.026
	(0.034)	(0.034)
Retirement	0.063	0.063
	(0.062)	(0.062)
Benefits	0.046	0.046
	(0.060)	(0.060)
Estate income	0.016	0.016
	(0.063)	(0.063)
From origin family	0.044	0.044
	(0.057)	(0.057)
Husband source of income		

Self-employee	0.014	0.013
	(0.041)	(0.041)
Retirement	0.112*	0.111*
	(0.057)	(0.057)
Benefits	0.089*	0.089*
	(0.049)	(0.049)
Estate income	-0.010	-0.010
	(0.065)	(0.065)
From origin family	0.044	0.044
	(0.045)	(0.045)
Constant	0.105*	0.107*
	(0.055)	(0.055)
Observations	15617	15617
R-squared	0.090	0.090

We include the full set of controls used for the main specification in Table 3, column (2). Robust standard error in brackets. * p<.10 ** p<.05 *** p<.01.

Appendix B: Heterogeneity in the care needs

The effects may be limited to those families where the need of care is stronger.

Table B.1: LPM for ICP (informal care provided to parents or in-laws) - Sensitivity

Dependent variable	(1) ICP	(2) ICP	(3) ICP	(4) ICP
	Parents aged 65+		Parents in bad health	
Help with house	0.021***	0.027***	0.040***	0.037***
	(0.008)	(0.008)	(0.013)	(0.014)
Observations	13628	13628	6241	6241
R^2	0.007	0.087	0.014	0.091

Note: * p<.10 ** p<.05 *** p<.01. We include the full set of controls used for the main specification in Table 3, column (2). Robust standard error in brackets.

In the Upper panel of Table B.1, we select the couples whose parents are aged 65 or older. The coefficient is actually only slightly bigger than the main estimates. We then focus on those whose parents or in-laws suffer from health-related limitation or are aged more than 85 (Lower panel). Estimates are bigger by around one percentage point. Also in these subgroups, the association is mainly driven by the in-kind help as Table B.1 shows in column (4) and (5). Additionally, the results are robust also in the case we only include relatively younger parents (aged 65-). The estimated effect of help with house on the informal care provided is around 0.020 with standard error of 0.01.

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