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No Free Lunch, Buddy: Housing Transfers and Informal Care Later in Life*

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Abstract

Previous empirical literature on intergenerational transfers of assets and services has mostly focused on the contemporary exchange or on the bequest motive. Differently, using Italian data, we provide evidence that parents who help their adult children with housing at the time of marriage are rewarded by higher chances of receiving informal care later in life. We show that this relation is robust to controlling for a wide set of individual and family characteristics and we discuss three possible explanations: (i) increased geographical distance; (ii) parents' reinforcement through support for the production of grandchildren; (iii) correlation with future financial transfers.

Keywords: informal care, grandchildren care, proximity, intergenerational transfers.
JEL codes: J12, J13, J14,

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1 Introduction

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). Both transfers can be entirely motivated by altruism, where one or both sides consider the other side's utility as a component of their own. Nevertheless, evidence from Europe and the US suggests that time transfers from adult children can be, at least partially, explained by exchange. This stream of studies mostly focused on the strategic use of bequests to drive children's attention (Bernheim et al., 1985; Angelini, 2007) or on the contemporary relation between inter-vivos financial transfers and caregiving (Norton and Van Houtven, 2006; Alessie et al., 2014; Norton and Huang, 2013; Jimenez-Martin and Prieto, 2015). However, a large fraction of parents support their adult children with important transfers several years before the time in which they will be in need of care.

In this paper we focus on the help with housing at the moment of marriage, which we show to be a relevant inter-vivos transfer, at least in the Italian context. This help, which can come either in form of down payments, real-estate donations or free-housing, may be part of an intertemporal exchange between the different generations. We, therefore, explore its relation with the informal care provided by the adult children in later years, as this is useful to shed light on how the members of the extended family network enforce implicit agreements of mutual assistance that extend over time. The analysis of contemporary transfers can hardly offer insights about this issue. Furthermore, an overly simplified bequest motive theory would suggest that parents who have already given consistent transfers in the past are actually less likely to receive informal care in the future, because they have limited the possibility of using bequests as a strategic device.

We also shed light on the possible mechanisms and explanations. Firstly, we focus on increased geographical proximity, which may facilitate the provision both for grand-parenting and elderly care. Secondly, we show that parents may try to enforce the implicit exchange contract by facilitating the production of grandchildren. Finally, we provide some evidence on the fact that the past housing transfer may be used by parents as a signal for future gifts to their children.

Few empirical studies provide evidence about the relation between past transfers and in-kind services provided by the adult children later on in life. An exception is Arrondel and Masson (2001), who use French data containing rich information on past and current financial and time transfers. The authors find a mild and not significant relation between past transfers and current caregiving, which lead them more recently to conclude that there is limited empirical support for inter-temporal exchange (Arrondel and Masson, 2006). 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. Cox and Stark (2005) provide evidence that parents are more likely to make tied transfers, in particular related with housing, when their adult children are planning to have offspring. Their hypothesis is that investing in the production of grandchildren can increase the amount of elderly care. This should work through a "demonstration effect", where the adult children set a good example in presence of their kids, in order to shape their preferences and increase the chances of receiving the same reward later in life.

Apart from theoretical concerns, analysing the relation between intra-family informal care and help with housing is crucial because it involves two of the most important inter-vivos transfers. On the one hand, housing costs represent a large fraction of income and European households generally perceive them as a heavy burden, as it is shown in Table 1. In this context, the role of the family in supporting entry into home ownership is fundamental (Mencarini and Tanturri, 2006; Helderman and Mulder, 2007; Modena and Rondinelli, 2011). This is particularly true in Southern Europe, where households traditionally acquire real estate either using personal savings or through family transfers or inheritance (Chiuri and Jappelli, 2003). For instance, Guiso and Jappelli (2002) estimate that around 28 per cent of Italian households own real-estate property that was acquired through earmarked transfers, that is as a gift, with financial help, or as a bequest.

On the other hand, informal care involves a large fraction of the population and it has relevant economic implications. Despite of the growth in the demand of professional services, unpaid help from adult children still represents a substantial form of assistance for elderly in need of care. Data from the SHARE survey show that in Italy the proportion of households with members aged 50+ receiving help from adult children is around 6.4 per cent, and similarly in other comparable European countries as it is shown in Table 1, column (3). In this context, it is also important to understand whether housing transfers come along with other services provided from older parents to adult children. In particular, the older generation can reinforce the informal contract, based on housing transfers at the time of marriage, by also providing more grandchildren care when there are young offspring. Across Europe, grandparents play an important role in France, Germany, Spain and Italy, according to the SHARE survey (Table 1). Around 40 per cent of them play an active role in looking after young children. Eventually, as highlighted by Brugiavini et al. (2013) in a recent study, there is evidence of reciprocity between the provision of grandchildren care and the receipt of informal care later on.

We aim to contribute to the literature on intergenerational transfers by empirically investigating the effect of housing transfers at the time of marriage on unpaid elderly care later on in life. In the EU context, Italy represents an interesting case-study for this topic: in fact, the provision of care services both to the elderly in need and the young offspring are mainly left to families. Moreover, liquidity constraints for the young are more severe than in other countries.

The empirical analysis exploits the data from three cross-sections (1998, 2003 and 2009)

Table 1: Housing costs and informal care in Europe

Country	(1) expenditure on housing as a fraction of hh income (per cent)	(2) Per cent of hh who find housing costs are a heavy financial burden	(3) Per cent of households with members aged 50+ who received help from their adult children	(4) Per cent of households with members aged 50+ who help their children with grandchildren care
France	17.9	27.4	5.3	41.6
Germany	27.9	19.1	8.2	37.2
Spain	21.6	57.4	8.7	42.2
Italy	16.6	60.4	6.4	45.4

Source: EU-SILC, Pittini (2012), Brugiavini et al. (2013).

of the Italian Multipurpose Survey on Families. They contain a rich set of 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 first wave was already used by Tomassini et al. (2003) to study the relation between past help with housing and geographical distance. We focus on help with housing at the time of marriage for several reasons. First of all because, as already discussed and further shown below, it involves a quite significant fraction of adult couples. Secondly, because it takes place at the moment in which a new household is formed, making the distinction between the two generations clearer. Finally, this past transfer is precisely identified in the Multipurpose Survey, while other forms of economic assistance are collected only with reference to specific moments of economic hardship. We nevertheless also discuss them in our empirical analysis.

The raw data display a positive correlation between the help with housing received at the time of marriage and the provision of elderly care at the moment of interview. We first show that this correlation persists after controlling for heterogeneity in other socio-demographic characteristics, such as employment, education, or other proxies for adult children and parents' wealth. We then try to understand to what extent the parents' choice of providing housing transfers is motivated by an economic rationale. For this purpose, we relate it to regional house prices at the time of marriage. We find that parents are less likely to provide help with housing when house prices are higher, suggesting that they take into account the opportunity cost of the house. We then show that this negative relation also translates to a lower probability of receiving informal care in the future. Assuming that this effect is driven by the reduced help with housing in the past, we argue that the IV estimate obtained by using house prices as an instrument for help picks up the local effect for those parents whose decision is mainly driven by strategic considerations. We then show that only a fraction of this effect can be explained by increased geographical proximity. There is also some evidence that alternative explanations are relevant, in particular the enforcement through the production of grandchildren and the relation with future monetary transfers.

The remainder of the paper is organised as follows: Section 2 discusses the theoretical background. Section 3 illustrates the empirical strategy, while data are presented in Section 4. Main results are discussed in Section 5 and possible explanations or mechanisms are explored in Section 6. In the conclusions we summarise the results.

2 Theoretical background

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). Downstream financial and in-kind transfers usually take place at an earlier stage of the life-cycle, when young individuals are investing in their human capital, and later on, when they acquire their own house. Financial transfers from parents to adult children are also used as an informal insurance towards income shocks, in particular in the case of unemployment (Becker et al., 2010). Other significant downstream transfers consist of grandparents taking care of grandchildren, thereby allowing parents to work and/or reduce expenditure on paid childcare (Arpino et al., 2012).

Looking at two extremes, these transfers can be explained by altruism or exchange. Laferrere and Wolff (2006) provide a detailed review of the existing theoretical literature, while Arrondel and Masson (2006) summarize the available empirical evidence. Altruism, or deferential utility, describes a case where an individual considers the someone else's utility as part of his/her own objective function (Cox, 1987). A different framework models altruism as imperfect, assuming that the individuals care about specific components of the other's utility. In this context, housing transfers, either direct or by providing the collateral, have received particular attention because of their tied nature (Pollak, 1988; Guiso and Jappelli, 2002; Cox and Stark, 2005; Manacorda and Moretti, 2006). In particular, housing transfers may be chosen by an altruist parent who wants to prevent his/her children from over-consuming early in life and ask more assistance later on.

On the opposite of altruism, individuals may be motivated by exchange. This can take place (i) simultaneously; (ii) between inter-vivos transfers and bequests; (iii) between inter-vivos transfers given at different moments in time. The first case involves parents rewarding either with money or other kinds of transfer those who provide them with more services. Norton and Van Houtven (2006) and Norton and Huang (2013), for instance, find evidence that caregivers are more likely to receive money from their parents (although there are no differences in terms of amounts). Conversely, according to Jimenez-Martin and Prieto (2015), informal caregivers receive less transfers. The second case is that parents use strategically their bequeathable wealth. Assuming that they are indifferent between siblings, they can make threats of disinheriting and increase the amount of caregiving or attention they can receive (Bernheim et al., 1985).

The literature on the exchange between contemporary inter-vivos transfers or on the

bequest motive neglects that a considerable fraction of downstream transfers takes place at an early stage in life, when elderly care is still less of a concern. In particular, parents usually help their children with housing arrangements at the time when they leave the nest to start their independent life.

Looking at the more complex set of possible inter-vivos transfers, there are several reasons why the help with housing may be part of an inter-temporal exchange with services provided by adult children later on. If the intergenerational transfers act as a substitute for the credit market (Guiso and Jappelli, 2002), it is not difficult to believe that caregiving services are used to pay back part of the sum. This can be part of a "family constitution" that leads to an equilibrium across generations, where each individual voluntarily chooses whether to take part in it or not (Cigno, 2006). Alternatively, this inter-temporal exchange can be thought of as an informal contract of insurance against old-age risk. Parents can buy it providing assistance with housing early on in life, when adult children choose to leave the origin home and build their own household.

The main issue is that this contract cannot be enforced through legal action, so that the younger generation has always the option of getting the gift and not provide any assistance when it will be needed. The two generations may, therefore, end up in a prisoner dilemma, where the parents do not help with housing because they expect the adult children to avoid their caring obligations. However, parents have at least three ways to guarantee that the children return part of the help by providing care later on. Firstly, they can condition the transfer on geographical proximity, therefore reducing the cost of assistance and increasing the level of social control (Tomassini et al., 2003; Coda Moscarola et al., 2010). Secondly, they can reinforce the insurance contract by creating a link with the new generation of grandchildren. Cox and Stark (2005) suggest that elderly parents may invest in their adult children's housing in order to increase the "production" of grandchildren, hoping that their presence will induce the middle generation to set a good example by providing elder care, generating the so-called "demonstration effect". This is also related with the possible presence of further exchange between grandchildren care and elderly care (Brugiavini et al., 2013). Finally, the parents may use the housing transfer as a signal for future financial help. Hence, the parents' housing transfer in the past can be viewed as a way to signal to their children about the size of family asset available to them as a reward for informal care.

3 Empirical strategy

This paper focuses on the relationship between help with house and informal care provided by the adult children (elderly care - ICP). We take the married couple of adult children as the unit of observation i, and we define ICP equal to one if at least one of the two partners provides help to at least one of the members of the older generation, i.e. parents and in-

laws.[1] We assume that informal care depends on whether the adult children receive any type of help with the purchase of their house at the time of marriage and a set of observable (X) and unobservable characteristics (ε):

$$ICP_i = \beta_0 + \beta_1 Help\ with\ House_{i,tm} + X_i^{'}\delta + \varepsilon_i \quad (1)$$

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 interviews (1998, 2003 and 2009).

The first issue that we face is that the relation between help with housing and services may be simply driven by different individual characteristics. In particular, 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; (iii) differences in wealth between families with and without housing help.

To handle these problems, we make use of the extensive information about the household that are available in the *Multiscopo* survey, assuming that including this set of variables in X_i would be sufficient for the unobservable components ϵ and ν to be uncorrelated with our main regressor, $Help\ with\ house_{i,tm}$. To this purpose, we estimate equation (1) using OLS, adding step-by-step different sets of variables.

At first we include socio-demographic variables which are good predictors for the exchange of services and, at the same time, may be correlated with the (past) help with housing. In a second step, we try to account for the fact that the relation between help with housing and intra-family services may also be explained by differences in income and wealth. Even if we do not have quantitative information on them, the survey includes several good proxies that can be used to understand how much the estimates are influenced by this wealth channel.

We then move forward to study whether parents incorporate the opportunity cost of the transfer when they decide whether or not to help their adult children with housing. To this purpose, we relate the transfer to the average house price in the region of residence at the time of marriage

$$Help\ with\ House_{i,tm} = \alpha_0 + \alpha_1 House\ Price_{r,tm} + X_i^{'}\sigma + \mu_i \quad (2)$$

and we test whether $\alpha_1 = 0$. If $\alpha_1 < 0$, then the evidence should suggest that the choice is at least partially driven by the opportunity cost, as parents become less likely to provide the transfer when it is relatively more expensive. On the contrary, $\alpha_1 > 0$ may indicate that parents are more likely to help their children when they are more in need of receiving it. Both mechanisms may be operative in different subsections of the population, but, empirically, α_1

[1] An alternative strategy could be to compare the two sides of the family, that is parents vs in-laws. Empirically, this strategy requires many observations, because the identification would come only from those who received help from one side only. Unfortunately, the survey does not allow us to do this, because in the last wave we cannot distinguish the two sides. Furthermore, if they answer that they received housing help in-kind, only one set of the older generation can be mentioned, and this may create some mechanical exclusion (for instance, if the other side donated some money for furnishing the flat).

should capture the prevailing one.

In the case of $\alpha_1 \neq 0$, we can exploit the induced variation in housing help to estimate the effect of the latter on ICP. In other terms, we can use $House\,Price_{r,tm}$ as an instrument for $Help\,with\,house_{i,tm}$, using a 2SLS estimator for equation (1). For it to be consistent for the true effect, we need to assume that the housing prices are not related to both unobservable component ε_i. We further discuss this assumption in the relevant section. In the presence of heterogeneous effects, this IV estimates is likely to capture the effect for the subgroup of families where parents' choice of transfer changes with a marginal variation in *House Price*. The estimate can then be interpreted as Local Average Treatment Effect (LATE) for this group (Imbens and Angrist, 1994).

4 Data

4.1 Dataset and sample selection

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.

Table 2: 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

Sample selection is reported in Table 2. 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 needed, 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 limited the analysis to married couples for several reasons. First of all, we are constrained by the 1998 wave, which asked the questions on housing help at the time of marriage only to married and cohabiting women. Secondly, 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 different dynamic of the marital history.

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.

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 2). 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 per cent of the couples. 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.

4.2 Variables of interest

In all the waves, adults are asked whether they provide any help to non co-resident individuals. They then have to specify the most important kind of help they provide, and who receives it, with possible multiple recipients. Around 85 per cent 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 medical assistance, adult care, domestic work, 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 per cent 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 a monetary transfer to purchase 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.

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: cohabiting; in another flat in the same building; in the same town, within 1 km; in the same town, more than 1 km away; in another town, within 16 kms; in another town between 16 and 50 kms away; more than 50 kms away. We define the distance to parents as the minimum distance from either the mother or the father, in case they live apart. This is available for

both partners.

Similarly, couples are asked how far they moved from their parents and in-laws at the time of marriage. A fraction of adult children, in particular among the older generations, moved in to live with them. We control for this choice of cohabitation in all the regressions, as this constitutes an important alternative to provide help with housing. We chose to keep it distinct from the "help with house" for three main reasons. First of all, in this case it is impossible to separate geographical distance with housing assistance. Secondly, it may involve sensibly different preferences and, because of the co-residence, a different decision mechanisms. Finally, as discussed in Section 5, this phenomenon is rather marginal for younger generations.

Among the set of control variables there are no missing values, because ISTAT traditionally provides data where all values have been imputed using multivariate methods. This is clearly a drawback for our analysis, but unfortunately ISTAT do not provide indicators for whether or not a single variable has been subject to imputation or correction. Only for some discrete explanatory variables, such as health or retrospective questions, missing values are explicitly allowed to account for cases where the respondent does not want to answer or does not remember. Instead of dropping them, we add the respective category along with the other dummies.

The dataset is a stratified sample where strata are defined by region and size of the town/city of residence. We do not include sample weights, both because we pool three cross-sections, and because we focus on modelling the relationships among different variables. Nevertheless, we 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, we follow the quite standard approach of including the regional dummies among the covariates.[2]

For house prices we use a 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 average the price 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 chose 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 cohorts. 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.

[2]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 the mortgage's accessibility.

4.3 Descriptive statistics

Table 3 shows the incidence of earmarked transfers which appears 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 per cent of Italian households have acquired real estate properties through a gift, or with the financial help of relatives, or as a bequest.

Table 3: 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.

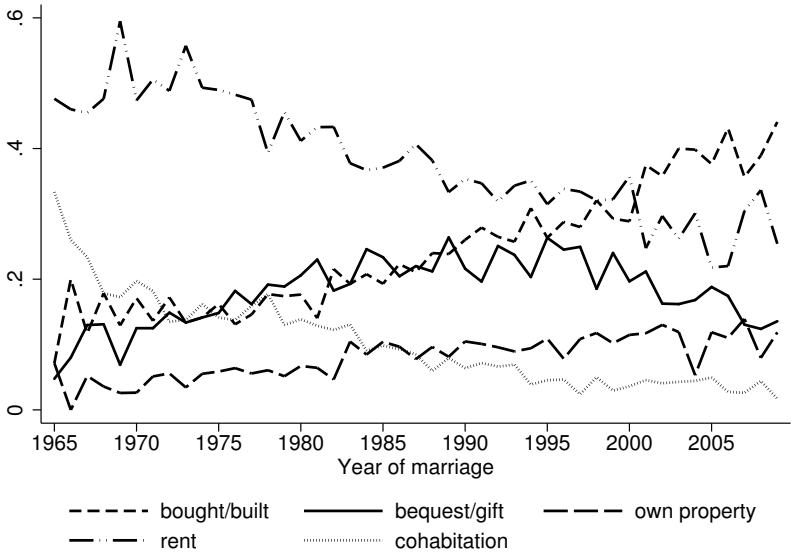
More recently, Jappelli et al. (2014) show that the proportion of households who received real estate transfers rose from 30 per cent in 1993 to above 35 per cent in 2006, which is similar to the increase over time that we find in this paper. These numbers are large but in line with the evidence available for other countries. For instance, Villanueva (2005) finds that bequests account for 31 per cent of total net worth for the US and slightly less for Germany.

This statistics suggest that the help with housing at the time of marriage is a relevant inter-vivos transfer, which involves a significant fraction of married couples. 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.[3] Only around 6 per cent of the couples in the sample received this kind of help, of which some also already received help with the house at the time of marriage. 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.[4] The proportion is quite limited, around 2.4 per cent. The focus on contemporary exchange, therefore, limits the analysis to a limited fraction of the overall transfers, as it neglects that several adult children already received economic assistance in the past.

[3]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.

[4]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.

Figure 1: Fraction of couples by housing arrangements and year of marriage, Italy, selected sample from the Multiscopo survey 1998/2003/2009



Our sample contains couples who married between 1956 and 2009. The median is 1988. Excluding the 1 per cent tail married before 1965, the distribution is quite symmetric. Figure 1 helps to understand how the housing transfers develop overtime, from 1965 to 2009. Specifically, it explains how the dwelling was obtained by the couple at the time of marriage: bought or built, bequest or gift, own property, rent and cohabitation. We register two different patterns. On the one hand, the percentage of rents and co-habitations decreases over time (years of marriage). Cohabitation, in particular, was relevant in the past but is a marginal phenomenon nowadays. On the other hand, the proportion of houses bought/built and buildings given as a bequest/gift increases in the time considered. Own properties rise too but more slowly than the previous alternatives. The percentage of rents (cohabitation) drops from almost 50 per cent (30) in 1965 to less than 40 (close to zero) in 2003. Bought dwelling and bequest register similar growth over the years (from 10 to almost 30 per cent).

5 Results

5.1 The relation between housing help and elderly care

In order to understand whether the association between housing help at the time of marriage and services exchanged later on is simply driven by other differences across couples, we start by including socio-demographic variables that are, according to the literature, good predictors for the exchange of services and may, at the same time, be correlated with the (past) help with housing. For obvious reasons, we include dummies for wave and region of residence in all regressions. As already discussed, at the couple level we control for a dummy for whether the couple moved in with parents or in laws after the marriage. We

also consider the number of children in the household, a dummy for their presence in the ICP equation, and the age of the youngest child codified to 0 if no children is 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 5.2). We include also the number of siblings and a dummy for their presence, given that they strongly reduce the need for ICP. We then use dummies for educational attainment and presence of health limitations (interacted with wave dummy to account for a minor change in the questionnaire wording). 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 preference towards caregiving and help, or that may influence 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 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. For each of the parents, age is rescaled so that the average age for a living parent is zero. 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 include 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. Summary statistics and the full set of estimated coefficients can be found in Appendix A. Here we show only the main results of interest. The coefficients on the various control variables appear in line with the economic theory.

Table 4 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 demographic characteristics (column 2), the estimated coefficient increases to 3.3 percentage points. This is a non-negligible effect, given that the proportion of informal carers in the overall sample is around 21 per cent. When we add wealth related covariates (column 2), the estimated coefficient of the housing transfer from parents shrinks to 2.6 percentage points. The estimates for the coefficient on help with house from columns (2) and (3) are statistically different with p-value smaller than 1 per cent, according to the proper Wald

Table 4: Linear probability model for ICP (informal care provided to parents or in-laws)

	(1) ICP	(2) ICP	(3) ICP	(4) ICP	(5) ICP
Help with house	0.020***	0.033***	0.026***		
	(0.007)	(0.007)	(0.008)		
Monetary help				0.022*	
				(0.012)	
In-kind help				0.029***	
				(0.009)	
Contemp. Monetary help					0.086***
					(0.026)
Observations	15617	15617	15617	15617	11829
R^2	0.006	0.084	0.090	0.090	0.090
Waves, regions	X	X	X	X	X
Demographic characteristics		X	X	X	X
Wealth characteristics			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. The variable Contemporary Monetary Help is not available for the 2009 wave. 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, 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.

test.[5] However, the effect is still quite relevant and the reduction in size is relatively small.

Help with housing at the time of marriage may consist either of "Monetary help" or "In-kind help". The latter is more likely to be tied and to be more related to geographical distance. In columns (3), we find that "Monetary help" is statistically (positive) significant at 10 per cent, while "In-kind help" turns to be more strongly related to the provision of informal care later. The latter estimated coefficient is around 0.029 in column (4). The difference between the two kinds of help is, though, not statistically significant, as a Wald test for their equality has p-value 0.588.

Another important heterogeneity in the kind of transfer is that, in some cases, the house was only made available for free (or for a small sum), without giving the property rights to the children.[6] 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,

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

[6]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 per cent in the sample of those who received help with house vs 7.0 for the others). The difference in the proportion of those who live in their own house is, instead, much smaller (70.0 vs 69.4).

still in line with the main results (0.020, s.e. 0.008).

In the last column we substitute the past help with a dummy for those couples who are currently receiving economic transfers from their parents (*Contemp. Monetary Help*). This is not available for the 2009 wave.[7] 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 recalled that the current monetary help from parents involves, in each year, a significantly smaller fraction of the population (2.4 per cent vs 31.1). In Section 6.3 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 in this case. 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, and therefore our dummy is likely to be at least a very good proxy also for the presence of an actual transfer. Secondly, as suggested by the theory and previous evidence, 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 tried to 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).

5.2 Robustness checks

We also carry out several robustness checks (tables with results are available on request). Firstly, 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

[7] The regression from Column (3), run only on 1998 and 2003, gives a similar positive and significant coefficient.

these dummies, suggesting that the relation is not simply driven by family tastes or increased contacts.

Secondly, 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 per cent 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, largely unaffected.

Thirdly, 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 five years selection. It seems safe to conclude that, once we account for all the set 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.

5.3 House prices and IV approach

If parents use the housing transfer to implicitly buy an insurance against old-age needs, we would expect that this contract becomes more attractive the cheaper is its opportunity cost for the transfer. We therefore expect a negative relation: when the house price increases, we should observe a lower likelihood to receive the house from parents or in-laws because the "present" is relatively more costly to obtain. On the opposite, the relation may be positive if parents are more likely to help their children when the housing market conditions are more problematic.

We start by regressing *Help with house* on *House price* and the whole set of variables. Table 5, column (1) shows that the first mechanism seems to prevail in our sample: when house prices at the time of marriage are larger, children are less likely to receive help in purchasing their first house. 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.

Inference is complicated by the fact that the *House price* variable only changes at the

regional level, for which we have 19 distinct categories.[8] The correct standard errors should account for this clustering. However, as discussed by Cameron and Miller (2015), these standard errors are likely to be distorted when the clusters are few. We therefore calculate p-values implementing the wild-bootstrap method that they suggest.[9] In all cases the coefficient is statistically significant at the 5 per cent level.

Table 5: Help with house, house prices and informal care

	All sample			Excluding cases of monetary help		
	(1) Help with house	(2) ICP	(3) ICP	(4) Help with house	(5) ICP	(6) ICP
	OLS	OLS	2SLS	OLS	OLS	2SLS
House price (1000 euro × sqm)	-0.044	-0.031		-0.076	-0.036	
Help with house			0.693			0.470
P-value (robust)	0.001	0.016	0.044	0.000	0.008	0.012
P-value (cluster region)	0.009	0.045	0.024	0.000	0.041	0.016
P-value (wild bootstrap)	0.021	0.086	0.047	0.000	0.095	0.069
F (robust)	10.7			11.0		
F (cluster region)	8.45			28.0		
Observations	14744	14744	14744	13309	13309	13309

Note: in each column, p-values and F statistics refer to the null that the coefficient associated with the displayed regressor is equal to zero (*House price* in columns (1),(2),(5),(6) and *Help with house* in columns (3),(5)). The 2SLS estimates are obtained by instrumenting *Help with house* by *House price*. All regressions include wave, region dummies, plus demographic characteristics and wealth characteristics, as in Table 4, 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.

The variation in house prices seems, therefore, to induce a change in the behaviour of parents. As long as this variability is not correlated to the unobservable heterogeneity leading to the (future) choice of providing elderly care, we could exploit it to instrument *Help with house* and address the potential bias not already accounted for by the inclusion of family and individual characteristics.

There are several reasons why *House price* may actually be correlated with unobserved heterogeneity entering the equation for ICP, so that it cannot be used as a valid instrument. One of the main issues 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 perform the IV strategy).

[8] 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.

[9] 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.

This is likely to reduce the predictive power of the instrument, 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 2). Finally, the year of marriage could be endogenous with respect to the transfer, because couples may wait for better housing market conditions. However, it is hard to argue that the choice of timing is related to the willingness to provide elderly care in the future. Furthermore, in Section 5.2 we already discussed that cohorts effects with respect to age or year of marriage are not significant in the main regressions, after accounting for the complete set of variables.

Table 5, column (2) shows the reduced form regressions of ICP on house. The estimated effect of *House price* is negative. If house prices at marriage affect ICP only through their effect on *Help with house*, then this finding corroborates the main results. The estimate is imprecise, but statistically significant at the 10 per cent level also using the wild-bootstrap s.e. The resulting estimate for the effect of *Help with house* on ICP, obtained by 2SLS (i.e. dividing column (2) by column (1)), shows a quite large relation. It is significant at the 5 per cent level according to all methods. However, the first stage F-statistic (column (1)) suggests that the instrument is potentially weak. In this situation, the most robust test for the significance of the endogenous regressor is the t-test on the excluded instrument (Help with house; see Davidson and MacKinnon (2010) for a discussion) in the reduced form for ICP (column (2)), which gives a p-value of 0.086 in the wild-bootstrap case, suggesting therefore that the coefficient is statistically significant, even if only at the 10% level.

The large relation between help with housing and ICP recovered by the IV regressions may have two different explanations. The first is that the unobserved component actually leads to a downward bias. In this case, for instance, the family preference for informal care may be negatively related with *Help with house*. Alternatively, the cost of providing it may be positively related with the transfer. This would imply that parents *negatively* select their adult children when they decide to provide them with help. In other terms, they are more likely to help their children if they know that, otherwise, they would be less willing to care after them in the future.

The second possible explanation is that the effect recovered by IV is a local effect for those parents who take into account the opportunity cost of the transfer when they make a decision, so that they provide it when the prices are lower than usual. This group of parents is likely to be the one for which the choice is more influenced by strategic considerations, and therefore we expect that they use it if they expect larger returns in terms of future elder care. The two explanations are related and corroborate the idea that the transfers are used by parents as an implicit insurance for the future.

It might be that house prices are more relevant for either in-kind or monetary transfers for housing at the time of marriage. To understand this, we built the categorical variable

Type of help as:

$$\textit{Type of help} = \begin{cases} 0 \text{ if Help with house} = 0 \\ 1 \text{ if Monetary help} = 1 \\ 2 \text{ if In-kind help} = 1 \end{cases} \tag{3}$$

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.

In columns (4)-(6) of Table 5 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 = 0. The first stage from Column (4) is stronger, while the reduced form for ICP is quite similar. As a result, the IV regression (column (6)) displays a smaller effect, but still quite large in economic terms. The precision is not strongly improved, as the wild bootstrap p-value for the significance of house price in the reduced form for ICP still rejects the null only at the 10 per cent level.

As for the OLS regressions, one concern could be that the dummy *Help with house* is actually capturing only the specific use of a transfer and not the simple presence of a downstream economic transfer in the past. This could be exacerbated by the use of house prices as a source of variation, because this cost may not necessarily affect the parents' decision about giving economic assistance, but simply their specific choice about the kind of help. Although our data do not allow to fully address this issue, as we may be missing some other transfers, we can provide two pieces of evidence that our results support our conclusions about the relevance of past transfers. First of all, we showed that the estimates are even more precise, with a negative first stage and a positive and significant second stage, when we focus only on in-kind help with house. In this case it is more likely that the parents already owned the property and therefore house prices would be the relevant contemporary opportunity cost (to be compared with the future gains from informal care). Secondly, we tried again 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 estimates are again in line with our conclusions and more precise. The first stage is stronger and still shows a negative relation between house prices and the help with house, while the 2SLS estimates of the main effect is around 0.39 and significant at the 5 per cent level.

6 Explanations and mechanisms

So far, there seems to be clear evidence of exchange between housing help at the time of marriage and future provision of elderly care. From an economics perspective, it is important to understand how this implicit contract is enforced over time. In the next three subsections we explore three possible explanations: (i) increased geographical proximity; (ii) reinforcement

through the presence of grandchildren; (iii) increased chances of future financial assistance or bequests.

6.1 Increased 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). Figure 2 reproduces their results by first fitting a set of linear probability models for each distance dummy 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).[10] 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 decrease in probability mass associated with other categories is related to those within 16 km of distance.

Figure 2: Predicted distribution of current distance to parents or in-laws by help received with housing transfer at the time of marriage, linear probability model fits, Multiscopo 1998/2003/2009

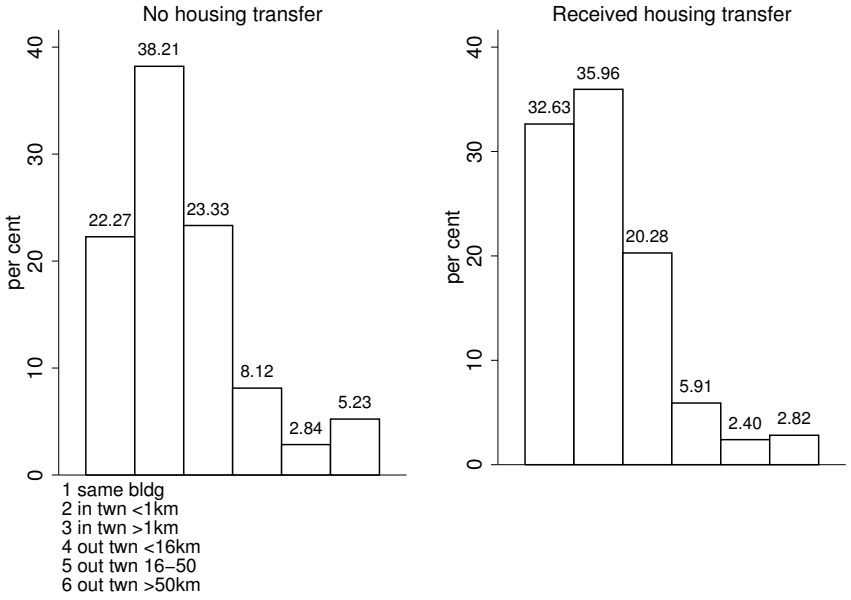


Table 6, column (1) shows a regression of ICP on distance dummies, which is are defined as the minimum distance from parents or in-laws. Although geographical distance is generally associated with less parental care, the negative effect of distance becomes substantially large only when adult children are located further than 16 km away. Using the predicted changes in the geographical distribution (Figure 2) we can also calculate that around 0.7 percentage points of the effect, approximately one fourth, can be explained by increased proximity.

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

Table 6: Linear probability model for ICP with distance controls

	(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 4, 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 to 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 (3) 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.[11] Comparing the coefficient on *Help with house* in the last column with the main estimate in Table 4, 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, consider only two categories of distance, close ($D_i = 1$) and far ($D_i = 0$). The mean regression conditional on distance becomes

$$E[ICP_i|HwH_{i,tm}, X_i^{'}, D_i] = \tilde{\beta}_0 + X_i^{'}\tilde{\delta} + (\beta_1 + E[\varepsilon_i|HwH_{i,tm} = 1, D_i] - E[\varepsilon_i|HwH_{i,tm} = 0, D_i])HwH_{i,tm}. \quad (4)$$

The coefficient on *Help with House* 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 5.1 and 5.3.

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 receive help, there is a specific subgroup whose location decision is more influenced by the help itself. We can try to give a sign to this selection term reasoning in an intuitive model where only geographical distance D_i and the individual unobservable willingness to provide elderly care (as summarized by ε_i) matter (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 suggested by 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 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, 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

[11] 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).

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.

6.2 Fertility and grandchildren care

Parents may reinforce the exchange of housing help with future elderly care by supporting the production of grandchildren and creating a link with the new generation, also through the provision of childcare. This would be in line with the "demonstration effect" proposed by Cox and Stark (2005). This evolutionary perspective hypothesizes that the older generation invests in the younger generation to pass on their own genetic line rather than out of concern for the happiness or well-being of their offspring. In particular, parents invest in the production of grandchildren. This creates an incentive for their own adult children to provide elderly care, because this "demonstration" could shape the grandchildren behaviour, increasing the probability that they will replicate the same behaviour with them. Such behaviour gives rise to a derived demand for grandchildren, and therefore we should expect to observe a positive relationship between intergenerational transfers and fertility.

Table 7: Linear probability model for the probability of having at least one child in or outside the household

Upper panel: *All sample*			
	(1)	(2)	(3)
Help with house	0.016***	0.007	
	(0.006)	(0.006)	
Monetary help			-0.007
			(0.010)
In-kind help			0.015**
			(0.007)
Observations	15617	15617	15617
R^2	0.123	0.148	0.148
Lower panel: *Women aged less than 40*			
	(1)	(2)	(3)
Help with house	0.021***	0.011	
	(0.008)	(0.008)	
Monetary help			-0.011
			(0.013)
In-kind help			0.023**
			(0.009)
Observations	9309	9309	9309
R^2	0.185	0.212	0.212
Waves, regions	X	X	X
Demographic characteristics	X	X	X
Wealth characteristics		X	X

Note: * p<.10 ** p<.05 *** p<.01. We include the full set of controls used for the main specification in Table 4. Robust standard error in brackets.

In Table 7 we focus on the probability of having at least a child, living in the household or elsewhere. Covariates are similar to those in previous tables, but we obviously exclude those relative to the presence of offspring in the household. We find a positive weak correlation

between the housing transfer and the probability of childbearing for the adult child later in life. 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.[12] 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 (lower panel), suggesting that help with house may also lead to anticipate the decision of having children.

In Table 8 we estimate the relation between help with house and a dummy (ICR) equal to one if the young offspring of the couple are at least sometimes looked after by a grandfather or grandmother. This information is collected by asking respondents to identify the person who currently entrusts with their children aged less than 13 when they are not with their parents or at school. Given that the outcome is, by construction, relevant only if the household includes at least one child aged 13 or less, the sample is further selected accordingly.

Table 8: Linear probability model for ICR (informal care received from parents or in-laws)

	(1) ICR	(2) ICR	(3) ICR
Help with house	0.082***	0.058***	
	(0.008)	(0.008)	
Monetary help			0.028**
			(0.013)
In-kind help			0.073***
			(0.009)
Observations	13384	13384	13384
R^2	0.354	0.370	0.370
Waves, regions	X	X	X
Demographic characteristics	X	X	X
Wealth characteristics		X	X

Note: * p<.10 ** p<.05 *** p<.01. ICR is a dummy equal to 1 for the adult couple who receive grandchildren care from parents or in- laws. We restrict the sample to all the individuals with at least a coresident child aged 13 or less. We include the full set of controls used for the main specification in Table 4 column (2) with the only obvious exception of the dummy of having a child. Robust standard error in brackets.

A positive and strong association is found in all specifications. Parents and in-law who are more prone to help with the house their offspring are also those who will provide more childcare later in life. Once we control for wealth characteristics the coefficient becomes smaller, but still around 6 percentage points, and statistically significant at the 1 per cent level. This effect is quite large, given that the proportion of couples receiving help with grandchildren is 48 per cent in the selected sample.

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 per cent level. In this case, the fraction

[12] 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.

explained by increased proximity is around one third, larger than what we find for ICP in Table 4.[13]

6.3 Housing help and future financial transfers

Finally, parents and in-laws can use the housing transfer at the time of marriage as an anticipated signal of further financial help to be given later in life. Using the Italian Multipurpose Survey, we can test whether there is a positive relationship between help with house at the time of marriage and future financial support from the family of origin. The hypothesis is that the 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 9, 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. In column (2) we focus on the relation with a dummy for contemporary monetary help from the older generation.

Once we control for the full set of covariates, the relation of help with house with this *OH* is non negligible, considering that only approximately 7 per cent 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 19 percentage points, a much larger effect than the one found for help with house itself.

The relation with a dummy for the receipt of contemporary transfers from the parents (*Contemp. Monetary Help*) is instead very small in size and not statistically different from zero. This suggests that the two channels captured by past transfers and contemporary transfers are independent.

An alternative but related channel 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

[13] Some robustness checks in Appendix B show stronger effect in case of younger children both less than 10 and 6 years old.

write a strongly unequal will.

Table 9: Linear probability model for OH (other help received from parents or in-laws)

	(1) OH	(2) Contemp. Monetary help
Help with house	0.011**	0.002
	(0.005)	(0.003)
Observations	11829	11829
R^2	0.056	0.065
Waves, regions	X	X
Demographic characteristics	X	X
Wealth characteristics	X	X

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 the main specification in Table 4. Robust standard error in brackets. * p<.10 ** p<.05 *** p<.01.

7 Conclusions

In this paper we contribute to the literature by investigating the effect of housing transfers at the time of marriage on unpaid elderly care later in life. We contribute to the debate about the economic rationality 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 intergenerational transfers on informal intra family care.

The results suggest that some parents invest in old-age assistance by providing a housing transfer to their adult children earlier on. The two generations seem, therefore, to be able to avoid the prisoner dilemma in which neither housing help nor elderly care are provided. The risk that children will not provide more care is partially avoided by increased geographical proximity, which decreases the cost of care. Living closer also facilitates social control, reinforcing the implicit exchange contract. However, perhaps surprisingly, only a fraction of the relation is explained by this channel, as the empirical association persists even after controlling for distance. A different explanation is that parents reinforce the implicit exchange contract by facilitating the presence of a third generation, given that help with housing seems to positively affect the presence of grandchildren and to be correlated with the provision of grandparental care to them. Finally, parents who provided a housing transfer seem to be more likely to provide further financial transfers in the future. This suggests that help with housing may be understood as a signal of a lifestream 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.

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. This suggests that parents take into account the opportunity cost of their help when they decide to enter in this implicit agreement. The local effect of help with house on informal adult care seems to be particularly large for this group, if estimated using an IV regression

where the housing transfer is instrumented by regional housing prices at the time of marriage. This confirms our main findings and is in line with the interpretation related to an implicit contract between generations.

In conclusion, our estimates suggest that informal care within the family is connected with an important past inter-vivos transfer, i.e. the help with purchasing a house at the time of marriage. This corroborates the hypothesis that down-stream and up-stream inter-generational transfers are tightly related, as suggested by some of the studies that focus on contemporary exchange. Nevertheless, even if the relation we find seems to be less strong than the contemporaneous one, it involves a larger fraction of the population in each year and it is, by definition, lasting over time. Furthermore, the exchange between past economic help and current in-kind services is quite different in nature, as it requires other mechanisms to enforce it over time. The explanations that we explored seem to be relevant, although with the current data and without additional sources of exogenous variation we are unable to fully distinguish them.

With respect to the theoretical and empirical literature, our results suggest that more attention should be devoted to past transfers, and not only to bequests and contemporary inter-vivos exchange. 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

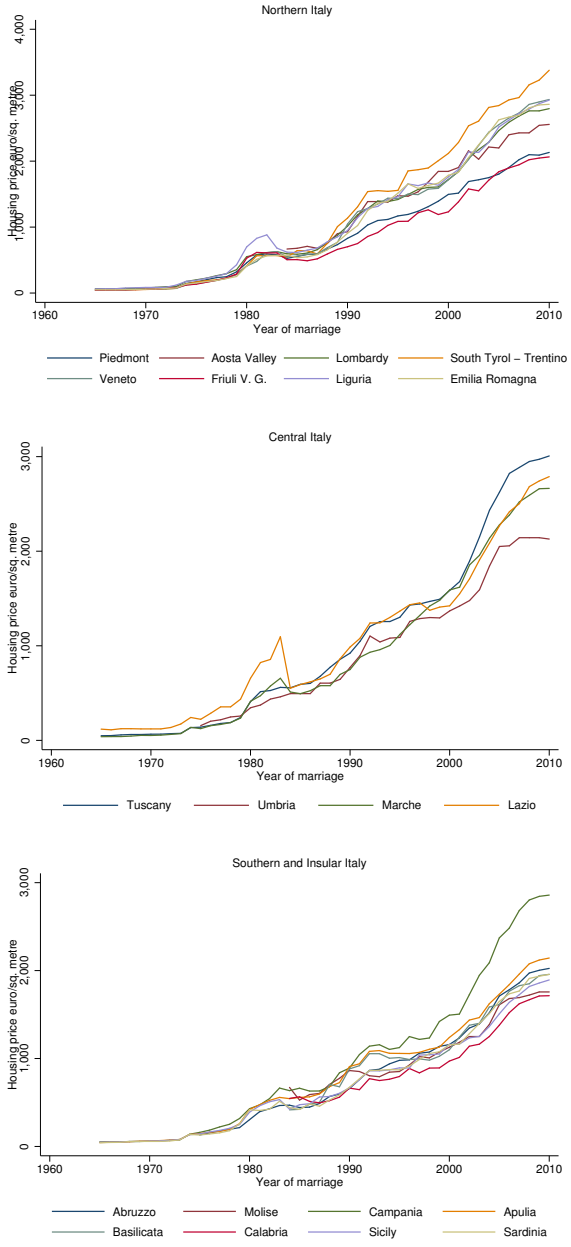

Table A.1: Summary statistics, ISTAT

	Mean	Std.Dev.	Min	Max
Main variables				
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
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
# 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

# of siblings	2.192	1.818	0	20
Children characteristics				
Presence of Child	0.857	0.350	0	1
# children	1.536	0.920	0	9
Age of the youngest child	8.046	7.745	0	39
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
Does not remember	0.025	0.157	0	1
mother education				
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
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
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
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				
# rooms	4.814	1.609	1	30
# mobiles	1.658	1.295	0	9
# TVs	1.828	0.875	0	9
# motorcycles	0.114	0.367	0	7
# 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	1965-2010	854.13	682.88	58.60	2132.14
Lombardy	3	1965-2010	1060.00	899.51	63.70	2796.10
South Tyrol - Trentino	4	1965-2010	1197.73	1092.49	43.68	3378.57
Veneto	5	1965-2010	1050.44	946.61	42.24	2934.69
Friuli V. G.	6	1965-2010	796.44	656.24	44.27	2064.29
Liguria	7	1965-2010	1095.16	912.50	62.71	2925.00
Emilia Romagna	8	1965-2010	1048.10	948.49	49.20	2861.91
Tuscany	9	1965-2010	1032.48	954.58	48.95	3007.14
Umbria	10	1975-2010	1042.22	656.41	156.01	2142.86
Marche	11	1965-2010	919.77	847.43	38.73	2664.29
Lazio	12	1965-2010	1030.66	810.46	111.41	2788.57
Abruzzo	13	1975-2010	911.64	581.36	130.74	2025.00
Molise	14	1984-2010	1086.29	396.25	527.52	1757.14
Campania	15	1965-2010	964.85	866.25	51.72	2858.57
Apulia	16	1965-2010	798.08	650.35	44.60	2142.86
Basilicata	17	1984-2010	1140.13	471.27	416.12	1957.14
Calabria	18	1984-2010	972.26	400.94	496.17	1714.29
Sicily	19	1965-2010	699.70	564.45	48.19	1893.65
Sardinia	20	1965-2010	708.81	598.79	41.54	1957.14

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

	(1) ICP	(2) ICP	(3) ICR	(4) ICR
Help with house	0.026***		0.058***	
	(0.008)		(0.008)	
Monetary help		0.022*		0.028**
		(0.012)		(0.013)
In-kind help		0.029***		0.073***
		(0.009)		(0.009)
Cohabitation	0.013	0.013	0.006	0.006
	(0.012)	(0.012)	(0.012)	(0.012)
2003	0.018*	0.018*	-0.034***	-0.034***
	(0.010)	(0.010)	(0.012)	(0.012)
2009	0.003	0.003	0.020	0.020
	(0.014)	(0.014)	(0.016)	(0.016)
Lombardy	-0.011	-0.011	-0.014	-0.012
	(0.015)	(0.015)	(0.017)	(0.017)
South Tyrol - Trentino	0.024	0.024	0.002	0.002
	(0.019)	(0.019)	(0.020)	(0.020)
Veneto	0.024	0.024	-0.022	-0.020
	(0.017)	(0.018)	(0.018)	(0.018)
Friuli V. G.	0.038*	0.038*	-0.030	-0.029
	(0.022)	(0.022)	(0.023)	(0.023)
Liguria	-0.030	-0.030	-0.031	-0.029
	(0.021)	(0.021)	(0.025)	(0.025)
Emilia Romagna	0.013	0.013	-0.034*	-0.032*
	(0.018)	(0.018)	(0.019)	(0.019)
Tuscany	-0.010	-0.009	-0.015	-0.013
	(0.017)	(0.017)	(0.018)	(0.018)
Umbria	-0.009	-0.009	-0.035	-0.033
	(0.021)	(0.021)	(0.022)	(0.022)
Marche	0.000	0.000	-0.017	-0.014
	(0.019)	(0.019)	(0.019)	(0.020)
Lazio	-0.048***	-0.048***	-0.037*	-0.036*
	(0.018)	(0.018)	(0.021)	(0.021)
Abruzzo	-0.028	-0.028	-0.022	-0.021
	(0.018)	(0.018)	(0.020)	(0.020)
Molise	-0.036*	-0.036*	-0.012	-0.012
	(0.021)	(0.021)	(0.022)	(0.022)
Campania	0.001	0.001	-0.055***	-0.055***
	(0.017)	(0.017)	(0.019)	(0.019)
Apulia	0.022	0.022	-0.029	-0.029
	(0.016)	(0.016)	(0.018)	(0.018)
Basilicata	0.002	0.002	-0.019	-0.019
	(0.021)	(0.021)	(0.023)	(0.023)
Calabria	-0.028*	-0.029*	0.012	0.011
	(0.017)	(0.017)	(0.019)	(0.019)
Sicily	-0.002	-0.002	-0.032*	-0.033*
	(0.016)	(0.016)	(0.018)	(0.018)

Sardinia	-0.016	-0.016	0.010	0.011
	(0.019)	(0.019)	(0.022)	(0.022)
Wife characteristics				
eta	-0.003**	-0.003**	-0.003**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)
Middle school	0.025*	0.025*	0.011	0.010
	(0.013)	(0.013)	(0.013)	(0.013)
School of vocational	0.039**	0.038**	0.026	0.025
	(0.017)	(0.017)	(0.017)	(0.017)
High school	0.041***	0.041***	0.025	0.024
	(0.015)	(0.015)	(0.015)	(0.015)
Bacheor or more	0.037*	0.037*	0.017	0.016
	(0.019)	(0.019)	(0.020)	(0.020)
Limitation (sometimes) * 1998	-0.010	-0.010	0.030	0.031
	(0.048)	(0.048)	(0.051)	(0.052)
Limitation (sometimes) * 2003	0.087	0.086	0.061	0.060
	(0.064)	(0.064)	(0.066)	(0.066)
Limitation (sometimes) * 2009	0.017	0.017	0.013	0.013
	(0.029)	(0.029)	(0.026)	(0.027)
Limitation (most of the time) * 1998	-0.226***	-0.226***	0.166*	0.165*
	(0.039)	(0.039)	(0.100)	(0.100)
Limitation (most of the time) * 2003	0.095	0.095	-0.071	-0.070
	(0.120)	(0.120)	(0.123)	(0.123)
Limitation (most of the time) * 2009	-0.092	-0.092	0.125***	0.126***
	(0.060)	(0.060)	(0.046)	(0.046)
Brother	0.005	0.005	0.025**	0.024**
	(0.011)	(0.011)	(0.012)	(0.012)
# brothers	0.001	0.001	-0.012***	-0.012***
	(0.002)	(0.002)	(0.002)	(0.002)
Husband characteristics				
Age	0.001	0.001	-0.003**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)
Middle school	0.014	0.014	0.017	0.016
	(0.013)	(0.013)	(0.013)	(0.013)
School of vocational	0.047***	0.048***	0.023	0.023
	(0.017)	(0.017)	(0.017)	(0.017)
High school	0.044***	0.044***	0.015	0.015
	(0.015)	(0.015)	(0.015)	(0.015)
Bacheor or more	0.058***	0.059***	-0.007	-0.007
	(0.019)	(0.019)	(0.020)	(0.019)
Limitation (sometimes) * 1998	-0.004	-0.004	0.057	0.058
	(0.059)	(0.059)	(0.047)	(0.047)
Limitation (sometimes) * 2003	-0.062	-0.062	0.071	0.070
	(0.060)	(0.060)	(0.049)	(0.049)
Limitation (sometimes) * 2009	0.075**	0.075**	-0.011	-0.010
	(0.031)	(0.031)	(0.027)	(0.027)
Limitation (most of the time) * 1998	-0.150***	-0.150***	-0.115	-0.114
	(0.051)	(0.051)	(0.075)	(0.075)
Limitation (most of the time) * 2003	0.049	0.049	0.118	0.114

	(0.111)	(0.111)	(0.093)	(0.093)
Limitation (most of the time) * 2009	-0.057	-0.057	0.037	0.035
	(0.052)	(0.052)	(0.049)	(0.050)
Brother	0.004	0.003	0.030**	0.029**
	(0.012)	(0.012)	(0.013)	(0.013)
# brothers	-0.010***	-0.010***	-0.011***	-0.011***
	(0.002)	(0.002)	(0.002)	(0.002)
Children characteristics				
Child	-0.048***	-0.048***		
	(0.014)	(0.014)		
# children	0.003	0.003	-0.006	-0.006
	(0.005)	(0.005)	(0.006)	(0.006)
Age of the youngest child	0.001	0.001	-0.030***	-0.030***
	(0.001)	(0.001)	(0.001)	(0.001)
Parents characteristics				
Only father alive	0.031**	0.031**	-0.096***	-0.096***
	(0.015)	(0.015)	(0.016)	(0.016)
Only mother alive	0.020**	0.020**	-0.005	-0.006
	(0.009)	(0.009)	(0.010)	(0.010)
Age: mother	0.002***	0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
Age: father	0.002***	0.002***	0.002**	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
Father limitation (sometimes) * 1998	0.072***	0.072***	-0.004	-0.004
	(0.027)	(0.027)	(0.025)	(0.025)
Father limitation (sometimes) * 2003	0.084**	0.084**	-0.016	-0.016
	(0.037)	(0.037)	(0.032)	(0.032)
Father limitation (sometimes) * 2009	-0.020	-0.020	-0.015	-0.015
	(0.021)	(0.021)	(0.020)	(0.019)
Father limitation (most of the time) * 1998	0.177***	0.177***	0.021	0.021
	(0.032)	(0.032)	(0.029)	(0.029)
Father limitation (most of the time) * 2003	0.056	0.056	-0.029	-0.029
	(0.038)	(0.038)	(0.038)	(0.038)
Father limitation (most of the time) * 2009	0.070**	0.070**	-0.050*	-0.051*
	(0.027)	(0.027)	(0.028)	(0.028)
Mother limitation (sometimes) * 1998	0.082***	0.082***	-0.020	-0.020
	(0.024)	(0.024)	(0.022)	(0.022)
Mother limitation (sometimes) * 2003	0.083***	0.083***	-0.028	-0.027
	(0.031)	(0.031)	(0.026)	(0.026)
Mother limitation (sometimes) * 2009	0.055***	0.055***	-0.021	-0.020
	(0.020)	(0.020)	(0.018)	(0.018)
Mother limitation (most of the time) * 1998	0.197***	0.197***	-0.065***	-0.066***
	(0.030)	(0.030)	(0.025)	(0.025)
Mother limitation (most of the time) * 2003	0.228***	0.228***	0.045	0.047
	(0.036)	(0.036)	(0.028)	(0.028)
Mother limitation (most of the time) * 2009	0.160***	0.160***	-0.050**	-0.050**
	(0.030)	(0.030)	(0.025)	(0.025)
Father: middle school	-0.003	-0.003	-0.005	-0.005
	(0.011)	(0.011)	(0.012)	(0.012)

Father: school of vocational	0.037*	0.037*	0.013	0.015
	(0.020)	(0.020)	(0.021)	(0.021)
Father: high school	0.013	0.013	-0.033*	-0.033*
	(0.017)	(0.017)	(0.019)	(0.019)
Father: bacheor or more	-0.007	-0.006	0.034	0.035
	(0.025)	(0.025)	(0.029)	(0.029)
Father: No remember	0.021	0.021	-0.066*	-0.065*
	(0.031)	(0.031)	(0.038)	(0.038)
Mother: middle school	-0.017	-0.016	-0.015	-0.015
	(0.011)	(0.011)	(0.013)	(0.013)
Mother: school of vocational	0.001	0.001	-0.029	-0.030
	(0.023)	(0.023)	(0.026)	(0.026)
Mother: high school	-0.018	-0.018	-0.024	-0.025
	(0.019)	(0.019)	(0.022)	(0.022)
Mother: bacheor or more	-0.060*	-0.060*	-0.055	-0.054
	(0.032)	(0.032)	(0.042)	(0.042)
Mother: No remember	-0.055	-0.055	0.108**	0.109**
	(0.035)	(0.035)	(0.042)	(0.042)
In-laws characteristics				
Only father alive	0.046***	0.046***	-0.061***	-0.062***
	(0.014)	(0.014)	(0.015)	(0.015)
Only mother alive	0.026***	0.026***	-0.006	-0.006
	(0.008)	(0.008)	(0.010)	(0.010)
Age: mother	0.002***	0.002***	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Age: father	0.002***	0.002***	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Father limitation (sometimes) * 1998	0.065**	0.066**	0.006	0.006
	(0.026)	(0.026)	(0.027)	(0.027)
Father limitation (sometimes) * 2003	0.109***	0.109***	-0.020	-0.019
	(0.033)	(0.033)	(0.034)	(0.034)
Father limitation (sometimes) * 2009	0.009	0.009	-0.016	-0.017
	(0.019)	(0.019)	(0.019)	(0.019)
Father limitation (most of the time) * 1998	0.188***	0.188***	-0.005	-0.005
	(0.031)	(0.031)	(0.029)	(0.029)
Father limitation (most of the time) * 2003	0.121***	0.121***	-0.010	-0.010
	(0.038)	(0.038)	(0.032)	(0.031)
Father limitation (most of the time) * 2009	0.017	0.017	0.025	0.026
	(0.027)	(0.027)	(0.029)	(0.029)
Mother limitation (sometimes) * 1998	0.042*	0.042*	-0.041*	-0.041**
	(0.022)	(0.022)	(0.021)	(0.021)
Mother limitation (sometimes) * 2003	-0.017	-0.017	0.012	0.011
	(0.026)	(0.026)	(0.026)	(0.026)
Mother limitation (sometimes) * 2009	0.047**	0.047**	0.014	0.014
	(0.019)	(0.019)	(0.018)	(0.018)
Mother limitation (most of the time) * 1998	0.135***	0.135***	-0.071***	-0.071***
	(0.027)	(0.027)	(0.023)	(0.023)
Mother limitation (most of the time) * 2003	0.131***	0.131***	-0.049**	-0.047**
	(0.029)	(0.029)	(0.024)	(0.024)

Mother limitation (most of the time) * 2009	0.129***	0.129***	-0.008	-0.009
	(0.028)	(0.028)	(0.024)	(0.024)
Father: middle school	0.005	0.005	-0.009	-0.008
	(0.011)	(0.011)	(0.013)	(0.013)
Father: school of vocational	0.011	0.011	-0.051**	-0.050**
	(0.020)	(0.020)	(0.023)	(0.024)
Father: high school	0.035**	0.035**	-0.008	-0.008
	(0.018)	(0.018)	(0.020)	(0.020)
Father: bacheor or more	0.015	0.015	-0.023	-0.024
	(0.027)	(0.027)	(0.030)	(0.030)
Father: No remember	-0.030	-0.030	-0.035	-0.035
	(0.029)	(0.029)	(0.036)	(0.036)
Mother: middle school	-0.018	-0.018	-0.031**	-0.031**
	(0.012)	(0.012)	(0.014)	(0.014)
Mother: school of vocational	-0.008	-0.008	0.017	0.017
	(0.023)	(0.023)	(0.028)	(0.028)
Mother: high school	-0.037*	-0.037*	0.032	0.031
	(0.020)	(0.020)	(0.023)	(0.023)
Mother: bacheor or more	-0.011	-0.011	0.024	0.025
	(0.037)	(0.037)	(0.041)	(0.041)
Mother: No remember	0.017	0.017	0.036	0.037
	(0.032)	(0.032)	(0.039)	(0.039)
Household characteristics				
Rent	0.016*	0.016*	0.067***	0.068***
	(0.009)	(0.009)	(0.011)	(0.011)
Own property	0.030**	0.029**	0.101***	0.093***
	(0.012)	(0.012)	(0.015)	(0.015)
Large house	-0.014	-0.014	0.009	0.009
	(0.015)	(0.015)	(0.016)	(0.016)
Civil house	0.002	0.002	0.003	0.003
	(0.012)	(0.012)	(0.012)	(0.012)
Social house	-0.009	-0.009	-0.025	-0.026
	(0.015)	(0.015)	(0.016)	(0.016)
Rural	-0.004	-0.004	-0.009	-0.011
	(0.023)	(0.023)	(0.025)	(0.025)
Improper home	0.015	0.015	-0.034	-0.033
	(0.055)	(0.055)	(0.067)	(0.067)
Do not know	-0.021	-0.021	-0.085***	-0.086***
	(0.025)	(0.025)	(0.027)	(0.027)
# rooms	0.003	0.003	0.005**	0.005**
	(0.002)	(0.002)	(0.002)	(0.002)
# mobile	0.003	0.003	-0.024***	-0.024***
	(0.004)	(0.004)	(0.004)	(0.004)
# TVs	0.011***	0.011***	0.007*	0.007
	(0.004)	(0.004)	(0.004)	(0.004)
# motorcycles	0.004	0.004	-0.010	-0.010
	(0.009)	(0.009)	(0.009)	(0.009)
# cars	0.009	0.009	0.010*	0.010*
	(0.006)	(0.006)	(0.006)	(0.006)

Occupation parents				
Father: blue collar	0.015	0.014	0.000	-0.001
	(0.010)	(0.010)	(0.011)	(0.011)
Father: clerical workers	-0.013	-0.013	0.012	0.011
	(0.010)	(0.010)	(0.011)	(0.011)
Father: employed but don't remember	0.000	0.000	0.011	0.011
	(0.029)	(0.029)	(0.033)	(0.033)
Father: unemployed	0.018	0.018	-0.033	-0.034
	(0.022)	(0.022)	(0.023)	(0.023)
Father: dead	-0.022	-0.022	-0.002	-0.002
	(0.022)	(0.022)	(0.024)	(0.024)
Father: don't remember	-0.096***	-0.096***	-0.032	-0.032
	(0.026)	(0.026)	(0.039)	(0.039)
Mother: blue collar	-0.011	-0.011	0.022	0.023
	(0.016)	(0.016)	(0.018)	(0.018)
Mother: clerical workers	0.016	0.016	-0.003	-0.004
	(0.016)	(0.016)	(0.017)	(0.017)
Mother: employed but don't remember	0.002	0.002	0.016	0.014
	(0.040)	(0.040)	(0.042)	(0.042)
Mother: housewife	0.000	0.000	0.003	0.003
	(0.013)	(0.013)	(0.014)	(0.014)
Mother: unemployed	-0.028	-0.028	0.003	0.003
	(0.030)	(0.030)	(0.031)	(0.031)
Mother: dead	0.042	0.042	-0.016	-0.018
	(0.054)	(0.054)	(0.057)	(0.057)
Mother: don't remember	0.019	0.019	-0.022	-0.022
	(0.035)	(0.035)	(0.047)	(0.047)
Occupation in-laws				
Father: blue collar	0.013	0.012	0.002	0.002
	(0.010)	(0.010)	(0.011)	(0.011)
Father: clerical workers	0.010	0.010	0.005	0.005
	(0.011)	(0.011)	(0.012)	(0.012)
Father: employed but don't remember	-0.010	-0.010	0.014	0.013
	(0.029)	(0.029)	(0.035)	(0.035)
Father: unemployed	0.029	0.029	-0.007	-0.008
	(0.022)	(0.022)	(0.024)	(0.024)
Father: dead	0.004	0.004	0.057**	0.057**
	(0.022)	(0.022)	(0.023)	(0.023)
Father: don't remember	0.035	0.035	-0.027	-0.028
	(0.034)	(0.034)	(0.038)	(0.038)
Mother: blue collar	0.015	0.015	-0.005	-0.005
	(0.017)	(0.017)	(0.019)	(0.019)
Mother: clerical workers	0.031*	0.031*	-0.009	-0.010
	(0.017)	(0.017)	(0.018)	(0.018)
Mother: employed but don't remember	0.045	0.045	-0.012	-0.012
	(0.039)	(0.039)	(0.045)	(0.044)
Mother: housewife	0.009	0.009	-0.016	-0.017
	(0.013)	(0.013)	(0.015)	(0.015)
Mother: unemployed	-0.007	-0.007	-0.049	-0.049

	(0.032)	(0.032)	(0.037)	(0.037)
Mother: dead	-0.003	-0.003	0.062	0.062
	(0.052)	(0.052)	(0.051)	(0.051)
Mother: don't remember	-0.021	-0.021	0.022	0.022
	(0.039)	(0.039)	(0.044)	(0.043)
Occupation wife				
Blue collar	-0.014	-0.014	-0.049***	-0.049***
	(0.012)	(0.012)	(0.013)	(0.013)
Clerical workers	0.011	0.011	-0.043	-0.044
	(0.034)	(0.034)	(0.038)	(0.038)
Unemployed	-0.011	-0.011	-0.129**	-0.130**
	(0.058)	(0.058)	(0.062)	(0.061)
Housewife	-0.049	-0.049	-0.152**	-0.152**
	(0.057)	(0.057)	(0.060)	(0.060)
Retired	-0.073	-0.073	-0.096	-0.096
	(0.066)	(0.066)	(0.065)	(0.065)
Student	-0.045	-0.045	-0.121**	-0.121**
	(0.058)	(0.058)	(0.061)	(0.061)
Husband source of income				
Blue collar	-0.004	-0.004	0.007	0.006
	(0.009)	(0.009)	(0.011)	(0.011)
Clerical workers	-0.035	-0.035	-0.026	-0.025
	(0.041)	(0.041)	(0.042)	(0.042)
Unemployed	-0.089	-0.089	0.043	0.047
	(0.059)	(0.059)	(0.055)	(0.055)
Retired	-0.082*	-0.082*	0.012	0.015
	(0.048)	(0.048)	(0.050)	(0.050)
Wife source of income				
Self-employee	-0.025	-0.026	-0.005	-0.005
	(0.034)	(0.034)	(0.038)	(0.038)
Retirement	0.063	0.063	0.037	0.036
	(0.062)	(0.062)	(0.063)	(0.063)
Benefits	0.046	0.046	0.050	0.048
	(0.060)	(0.060)	(0.064)	(0.064)
Estate income	0.016	0.016	0.059	0.059
	(0.063)	(0.063)	(0.066)	(0.066)
From origin family	0.044	0.044	0.043	0.042
	(0.057)	(0.057)	(0.059)	(0.059)
Husband source of income				
Self-employee	0.014	0.013	0.057	0.055
	(0.041)	(0.041)	(0.042)	(0.042)
Retirement	0.112*	0.111*	0.046	0.043
	(0.057)	(0.057)	(0.054)	(0.054)
Benefits	0.089*	0.089*	0.026	0.024
	(0.049)	(0.049)	(0.050)	(0.050)
Estate income	-0.010	-0.010	-0.059	-0.061
	(0.065)	(0.065)	(0.083)	(0.083)
From origin family	0.044	0.044	0.036	0.034
	(0.045)	(0.045)	(0.046)	(0.046)

Constant	0.105*	0.107*	1.010***	1.016***
	(0.055)	(0.055)	(0.062)	(0.062)
Observations	15617	15617	13384	13384
R-squared	0.090	0.090	0.370	0.370

We include the full set of controls used for the main specification in Table 4, 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: Sensitivity: Linear probability model for ICP

Upper panel: *parents aged more than 65*			
	(1)	(2)	(3)
	ICP	ICP	ICP
Help with house	0.034***	0.027***	
	(0.008)	(0.008)	
Monetary help			0.025*
			(0.013)
In-kind help			0.029***
			(0.010)
Observations	13628	13628	13628
R^2	0.081	0.087	0.087
Lower panel: *at least one parent with health-related limitations or aged 85+*			
	(1)	(2)	(3)
	ICP	ICP	ICP
Help with house	0.048***	0.037***	
	(0.013)	(0.014)	
Monetary help			0.019
			(0.022)
In-kind help			0.045***
			(0.016)
Observations	6241	6241	6241
R^2	0.080	0.091	0.091
Waves, regions	X	X	X
Demographic characteristics	X	X	X
Wealth characteristics		X	X

We include the full set of controls used for the main specification in Table 4. Robust standard error in brackets. * p<.10 ** p<.05 *** p<.01.

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.

In a similar fashion, Table B.2 shows the estimates for ICR in those cases when there are younger offspring in the children's household. In the upper panel we focus on offspring aged less than 10, while in the lower we restrict to those aged less than 6. Both cases should emphasize more the role of grandchildren care during the early stage of life where the adult children are more in need of help. The effects are quite similar to those presented in the main table. Also in this case, monetary help from parents seems to be less correlated with ICR than in-kind transfers.

Table B.2: Sensitivity: Linear probability model for ICR

***Upper panel**: child aged less than 10*			
	(1)	(2)	(3)
	ICR	ICR	ICR
Help with house	0.100***	0.069***	
	(0.010)	(0.011)	
Monetary help			0.035**
			(0.016)
In-kind help			0.088***
			(0.012)
Observations	8240	8240	8240
R^2	0.086	0.119	0.120
***Lower panel**: child aged less than 6*			
	(1)	(2)	(3)
	ICR	ICR	ICR
Help with house	0.092***	0.063***	
	(0.012)	(0.012)	
Monetary help			0.019
			(0.018)
In-kind help			0.089***
			(0.014)
Observations	5985	5985	5985
R^2	0.089	0.129	0.130
Waves, regions	X	X	X
Demographic characteristics	X	X	X
Wealth characteristics		X	X

We include the full set of controls used for the main specification in Table 4. Robust standard error in brackets. * p<.10 ** p<.05 *** p<.01.

Nevertheless, the results are still in line with the fact that the parents try to reinforce the inter-temporal exchange contract by providing assistance with the grandchildren.