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Private Transfers, Borrowing Constraints and the Timing of Homeownership

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Luigi Guiso* **and Tullio Jappelli****

Abstract

The 1991 Italian Survey of Household Income and Wealth contains detailed information on how respondents acquired their main residence and any other real estate. This information is used to estimate the impact of inter vivos transfers on the saving period required to purchase a house and on the value of the house purchased when households have limited access to mortgage markets. It is found that transfers shorten the saving time by about two years and allow households to purchase considerably larger homes. The results have implications for the debate about the source of the relation between aggregate saving and growth.

Keywords: intergenerational transfers, homeownership, borrowing constraints

JEL Classification: D91, R21

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1. *Introduction*

Private transfers are the chief mode of economic interaction between family members, and as such they can help maintain or reduce disparities in wealth and consumption. Depending on their nature, private transfer decisions can significantly affect the ultimate impact of changes in social security legislation, government debt and transfer policies. Well-timed transfers can make up for insurance and credit market failures and overcome the distortions in the allocation of consumption over time and states of nature induced by financial market imperfections. Accordingly, intergenerational transfers are receiving increasing attention in the policy debate.

Despite their importance to an understanding of households' interactions, the empirical evidence on the effect of transfers on recipients' behavior is scant. In this paper we rely on Italian data drawn from the 1991 Bank of Italy Survey of Household Income and Wealth (SHIW) to determine the effect of gifts and other transfers earmarked for real estate on households' behavior. The magnitude of this effect carries important implications concerning the relation between aggregate saving and growth. As stressed by Deaton (1996), in the presence of a downpayment constraint, saving for house purchases is analogous to saving for retirement. Since in both cases saving occurs before dissaving, in a growing economy the average age of each dollar saved will be less than the average age of each dollar dissaved. Aggregation over households with different propensities to save then leads to the well-documented positive correlation between aggregate saving and growth (Carroll and Weil, 1994). Transfers could allow households to purchase homes earlier in life, thus lowering the average age of each dollar saved and reducing the positive effect of growth on saving. In order to understand if mortgage market imperfections can potentially account for the saving-growth link it becomes crucial to establish whether gifts earmarked for real estate are widespread and if they affect the timing of home purchases.

In Section 2 we discuss how intergenerational transfers affect the decision to purchase a house. If they come early in life, bequests (whether intended or involuntary) and gifts directly reduce the time required to save enough to purchase a house. Monetary transfers provide additional resources for home purchase: they increase own funds, make it possible to meet the downpayment or cut saving time. Transfers in kind may have similar effects

if the house is acquired from parents or relatives below the market price. The 1991 SHIW contains a special section in which respondents provide information on how they acquired their main residence and any other real estate, which we use in Section 3 to construct an indicator of the share of transfers in total real estate wealth in order to assess the relevance of earmarked intergenerational transfers. In the presence of mortgage market imperfections, which are particularly severe in Italy, private transfers affect households' opportunities to become homeowners in various ways.

The survey also allows us to construct a proxy for the number of years during which a household saves before purchasing a home. Using duration models, in Section 4 this variable is then related to demographic variables, permanent income, an index of regional real estate prices and the value of transfers received. Particular attention is paid to the potential bias arising from censored observations. It is found that transfers shorten saving time by about two years (20 percent of the average time for owners). Section 5 shows that this result is robust under various assumptions, in particular with regard to the potential endogeneity of transfers and the effect of time-varying regressors. In Section 6 we find that transfers increase substantially the value of the house purchased. Section 7 summarizes the results.

2. *Transfers and borrowing constraints*

The size of intergenerational transfers is clearly important in analyzing the process of wealth accumulation. Given capital market imperfections, however, the timing of transfers also matters, not just their amount. In fact, the gain in utility from receiving a transfer earmarked for real estate late in life may be very limited compared with the benefit of receiving the same transfer in periods in which the consumer is credit constrained.

Artle and Varaya (1978) show that mortgage market imperfections can distort the household consumption profile and lead to serious welfare losses: borrowing constraints in fact force even impatient consumers to reduce consumption early in life in order to accumulate enough assets for the downpayment and enjoy the benefits of ownership. Furthermore, the length of the time over which consumption is compressed is longer the higher the

downpayment and the lower the initial amount of assets.[1] Cox(1990) argues that inter vivos transfers, such as financial support from parents or friends, can help individuals constrained in the consumption loan market to raise current consumption.[2]

For the same reason, timely intergenerational transfers can overcome imperfections in the mortgage market by reducing the saving time required to purchase the house, during which consumption is constrained; alternatively, given saving time, transfers allow an increase in current consumption. Since severe mortgage market constraints may discourage individuals from buying altogether, transfers can turn potential tenants into owners. For this to be the case, transfers must take place relatively early in life; only in this case do transfers offset the reduction in utility during the saving period, i.e. the reason why individuals may choose to remain tenants. Late, unexpected transfers might be of little help if they come when a large chunk of lifetime resources has already been consumed.

In short, if timed correctly, transfers could reduce the distortions in the intertemporal allocation of consumption induced by mortgage market imperfections. In the absence of such imperfections, individuals who wish to purchase a house could borrow early in life and repay the mortgage over a long period, which in principle could extend over the entire life. In the presence of borrowing restrictions, households are fully or partly prevented and discouraged from borrowing and must save for the downpayment or for

[1] Assume that the real interest rate r equals the rate of time preference, and that earnings are constant over the life-cycle, so that optimal consumption and saving are both constant. Let $a(t)$ denote accumulated assets up to age t, s optimal savings (defined as the constant level of non-interest income net of rents minus optimal consumption) over the saving period necessary to meet the downpayment bP, where $1-b$ is the share of the house price P that can be financed by borrowing, and T the optimal saving time. Optimal saving time is then given by the condition $a(T)=bP$. Integrating the dynamic budget constraint and solving, $T = \frac{1}{r}\ln\frac{rbP+s}{ra(0)+s}$, where $a(0)<bP$ is the initial level of assets. For given s, T is increasing in bP and decreasing in $a(0)$. If the initial endowment $a(0)$ is interpreted as a transfer taking place at $t=0$, its effect is to reduce saving time for any given saving rate. Obviously, if part of the transfer is used to increase current consumption, the effect on saving time is attenuated.

[2] Guiso and Jappelli (1991) report that some transfers in Italy are targeted towards liquidity-constrained households, which is consistent with the hypothesis that informal markets can ease borrowing constraints. However, since such transfers are not common, most households remain liquidity-constrained even after private transfers have been made. The results of this paper are broadly consistent with this study.

outright purchase. Even if family transfers can help overcome the incentive and information problems that are at the root of credit market imperfections, they cannot entirely substitute for a fully efficient credit market (Altig and Davis, 1989). It is therefore important to establish empirically how far private transfers can go in offsetting capital market imperfections.

These issues are particularly important in Italy: the mortgage market is characterized by short maturities (10-15 years is the standard), high interest rate spreads, and downpayments often well above 50 percent. Several factors can account for these imperfections: regulations requiring minimum downpayments of 50 percent of the value of the house, limited competition between financial intermediaries, asymmetric information between borrowers and lenders, and transaction costs.[3]

Legal costs further inhibit the functioning of mortgage markets. The process of repossessing collateral is extremely cumbersome in Italy, due to the length of the judicial process and various protections accorded to debtors. On average, it takes 5.5 years for a bank to repossess the collateral (4 years in the North and 6.6 years in the South, due to geographical differences in the inefficiency of the courts). Net of legal costs, the average share of the mortgage repossessed in case of default is below 60 percent of the value of the loan granted (Generale and Gobbi, 1996).

A crude but striking indicator of the mortgage markets' imperfections is simply the size of the market. In 1991 only 10.2 percent of the households interviewed reported having mortgage debt; on average, outstanding housing liabilities represent only 2.4 percent of the gross value of the house. The size of mortgages is also modest: only 1.6 percent of homeowners had outstanding loans greater than 60 percent of the value of the property.[4] Focusing on recent home buyers (305 households that purchased a house in 1991), only 11.2 percent have a mortgage in excess of 40 percent of the value of the house (2.3 percent in excess of 60 percent); and 65 percent report no mortgage liability. These features of the mortgage market do not discourage Italians from becoming homeowners. In fact, the overall home ownership rate rose from 46 percent in 1961 to 59 percent in 1981 and over

[3] The minimum downpayment was lowered to 25 percent in 1987, and the compulsory minimum was abolished in June 1995.

[4] This suggests that in many cases the purpose of housing loans is to finance repairs and additions, rather than a purchase; the SHIW does not distinguish between the two types of loans.

62 percent in 1991. However, borrowing constraints in the mortgage market dramatically affect the average age at which the house is purchased.

Figure 1 plots the cross-sectional homeownership rate by age.[5] The rate increases very slowly with age, peaking just before retirement, implying that for the majority of households the saving period before home ownership (i.e., the renting period) is substantial.[6] The pattern contrasts sharply with other countries, where the home ownership rate peaks much earlier. This is borne out by the average age of first-time buyers: 28 and 29 in the U.S. and UK, respectively, in 1985 as against 41 in Italy in 1991.

Potentially, there is ample role for transfers to affect housing purchase decisions. But to be effective, transfers have to be well timed. Only by chance can bequests serve this purpose. Deliberately overcoming borrowing constraints requires inter vivos transfers during the renting period in which the household is saving to buy the house. After receiving a transfer, a household that plans to purchase a house has various options. Since the transfer substitutes for own savings, it can choose to save less each period, keeping 'saving time' and the value of the house constant; it can make a larger downpayment, thus reducing mortgage debt; it can purchase a larger house; finally, it can keep own saving, downpayment and the house value constant, reducing saving time. If there are indivisibilities in housing purchases, a large transfer may also allow access to a larger or better house with additional saving effort. In this case saving time may even rise in response to a transfer, depending on the utility effect of the larger house as well as on the size of the transfer. Even if these options are not mutually exclusive, the effect of transfers on saving time is a useful index of the

[5] The figure is obtained by plotting the fitted values of a logit regression against a fifth-order polynomial in age, see the Appendix for details. The data set merges 6 independent cross-sections (the 1984, 1986, 1987, 1989, 1991 and 1995 SHIW), a total of about 50,000 observations. We do not focus just on 1991 (where the age-ownership profile is actually very similar to the one shown in Figure 1) because in Section 4 we want to compare the cross-sectional profile with a cohort-adjusted profile.

[6] Japan exhibits a pattern of housing tenure by age that is similar to the Italian. Hayashi, Ito and Slemrod (1988) suggest that the main explanation for the difference between the much steeper U.S. profile and the Japanese profile is the downpayment required by creditors. They show, by means of simulations, that a reduction of 20 percentage points in the downpayment ratio could lower private saving by 2 percentage points of national income in Japan.

effectiveness of informal markets in reducing the intertemporal distortions induced by mortgage market imperfections.

Econometric estimates by Engelhardt and Mayer (1995) based on 1,213 first-time buyers from the Chicago Title and Trust Survey indicate that in the U.S. transfers primarily increase the amount of the downpayment, and have little impact on own savings or borrowing. Transfers are also found to have a negative but small impact on saving time and a strong positive effect on the value of the house purchased.

3. *Definition of transfers*

The primary purpose of the Bank of Italy Survey of Household Income and Wealth is to collect detailed data on demographics and households' income and wealth.[7] The 1991 survey, covering 8,188 households and 24,930 individuals, is representative of the Italian population. There are two transfer indicators in the SHIW, which we denote as *transfers earmarked for home purchase* and *general transfers*, respectively. We discuss them in turn.

Respondents provide separate information about the way they acquired their residence and other real estate.[8] For each property, owned in whole or in part, households report when they acquired and if it was purchased, inherited or received as a gift. In case of purchase, they report whether they received any financial help from parents, relatives or friends in making the downpayment or outright purchase.[9] If the property was purchased from parents, relatives or friends, respondents report whether the full market price

[7] See Brandolini and Cannari (1994) for discussion of the sample design of the SHIW. The unit of observation is the household, defined as all persons residing in the same dwelling who are related by blood, marriage or adoption. The head is defined to be the person who contributes most to household income (usually the male in nuclear households). The interviews for the 1991 SHIW were conducted in the Spring of 1992. Flow variables refer to 1991 and stock variables are end-of-period values. Given the survey design, different households have different probabilities of being included in the sample. To obtain unbiased estimates of population means, summary statistics are computed using sample weights.

[8] The information refers only to real estate currently owned and thus excludes transfers received in connection with real estate sold in the past.

[9] In the survey “help for downpayment” is not distinguishable from “help for purchase”. Since few Italian households borrow, “help for downpayment” is likely to have a minor role.

or a reduced price was paid. The Appendix details the exact wording of the survey questions.

This information allows us to measure the fraction of households that received transfers earmarked for home purchase and to divide transfers (both in kind and monetary) into bequests and inter vivos transfers. Since our purpose is to measure intergenerational transfers, transfers between spouses, which account for a substantial portion of bequests, are excluded. For lack of data no account is taken of intergenerational flows between individuals living in the same household.[10] In case of gifts or bequests inheritance taxes are reported and excluded from the measure of transfers.

The first panel of Table 1 shows that the incidence of earmarked transfers is substantial: about one third of the homeowners received financial support; 11 percent received a bequest, more than 20 percent an inter vivos transfer (mainly financial support). For second homes the proportion receiving transfers is over 50 percent, bequests being the largest source of support. In total, more than 40 percent of those holding real estate report some form of intergenerational transfer. The overall incidence of transfers in the total sample (including non-owners) is 28.1 percent.

The other three panels in Table 1 focus on transfer amounts. For homeowners (5,142 households, or 62.8 percent of the sample), the average value of the house is 163.6 million lire; on average, 128.8 million lire (79 percent) derive from own saving, 16.2 million (9.9 percent) from bequests, and 18.1 million (11.1 percent) from inter vivos transfers (gifts, financial support or discount price). This shows that Italian households rely mainly on their own savings for house purchase. For the sub-sample of owners of second homes and other real estate (third panel), inter vivos transfers account for 9.2 percent of the value of the property and total transfers (including bequests) for 35.7 percent. The last panel refers to the whole sample, including renters: earmarked transfers are found to account for 24.5 percent of real estate wealth.

[10] A total of 96 respondents report receiving the house as a bequest or as a gift from the spouse. We treat these assets as purchased by the household. This introduces a small bias in the computation of the share of transfers in real estate wealth because some of the real estates transmitted to the spouse may have been received by the donor as a bequest. Treating all inter-spousal transfers as bequests has a minor impact on the overall share of transfers; for instance, in the last panel of Table 1 the share rises to 26.7 percent (38.1 percent with capitalization of interest).

TABLE 1
TRANSFERS EARMARKED FOR HOME PURCHASE AS A SOURCE OF ACQUISITION OF REAL ESTATE WEALTH

Incidence of transfers: fraction of households receiving transfers in selected groups	First house (homeowners only)	Other property (owners only)	All property (entire sample)
(1) Received as a bequest	11.0	34.5	12.6
(2) Received as a gift	4.6	11.1	4.8
(3) Financial support	15.5	8.4	11.0
(4) Price discount	0.6	0.7	0.5
(5) Total fraction receiving help (a)	31.7	52.3	26.7
(6) Number of households	5,142	1,723	8,188

(a) The total does not always correspond to the sum of the numbers in the column because some households receive help from more than one source.

	Amount in millions of lire	% of property value
First house: homeowners only (5,142 households)		
(1) Purchased with own funds	128.8	79.0
(2) Received as a bequest	16.2	9.9
(3) Received as a gift	8.1	5.0
(4) Financial support	9.6	5.9
(5) Price discount	0.4	0.2
(6) Total house value	163.1	100.0
(7) Inter vivos transfers = (3)+(4)+(5)	18.1	11.1
(8) Total transfers = (2)+(3)+(4)+(5)	34.3	21.0
(9) Total capitalized transfers	49.5	30.3
Other property: owners only (1,723 households)		
(1) Purchased with own funds	90.9	64.3
(2) Received as a bequest	37.4	26.5
(3) Received as a gift	9.1	6.4
(4) Financial support	3.7	2.7
(5) Price discount	0.2	0.1
(6) Total house value	141.3	100.0
(7) Inter vivos transfers = (3)+(4)+(5)	13.0	9.2
(8) Total transfers = (2)+(3)+(4)+(5)	50.4	35.7
(9) Total capitalized transfers	70.5	49.9

to be continued

	Amount in millions of lire	% of property value
All property: entire sample (8,188 households)		
(1) Purchased with own funds	105.5	75.4
(2) Received as a bequest	19.4	13.9
(3) Received as a gift	7.4	5.3
(4) Financial support	7.2	5.2
(5) Price discount	0.3	0.2
(6) Total house value	139.8	100.0
(7) Inter vivos transfers = (3)+(4)+(5)	14.9	10.7
(8) Total transfers = (2)+(3)+(4)+(5)	34.3	24.5
(9) Total capitalized transfers	48.9	34.9

Notes. All averages are computed using sample weights. Transfers and the value of the property are expressed in millions of 1991 lire. Property values are net of mortgage debt. The capitalized transfers are computed assuming a 2 percent annual net real rate of return on housing wealth.

This estimate of the share of transfer wealth counts all interest on transfers as part of life-cycle saving, not intergenerational transfers. Thus, 24.5 percent is a lower-bound estimate of the share of transfers earmarked for real estate. Kotlikoff and Summers (1981) argue that intergenerational transfers should also include the interest accrued on the transfer. The upper estimate of transfer wealth of 34.9 percent is obtained by capitalizing transfers at a net real return on housing of 2 percent.[11]Since information on the year in which the transfer is received is missing, the computation arbitrarily assumes that earmarked transfers are received the same year as the purchase was made.

In addition to information on how the property was financed, SHIW respondents report the year in which the husband or wife acquired the property and the age at first employment. This allows us to construct a proxy for saving time and to estimate the effect of inter vivos transfers on that variable and on the value of the house selected. One difficulty in estimation is that saving time for renters is right censored. Ignoring renters

[11] This is a relatively high value, as one must net the average annual gross real rate of return on the housing stock (about 3 percent in the last three decades) from the tax rate on housing and subtract from this the annual rate of depreciation of the stock of housing.

leads to biased estimates of the effect of transfers on saving time. The direction of such bias, however, is ambiguous because it depends on the way that transfers affect renters' behavior. If it is the case that older renters have not received any transfer, the effect of transfers on saving time will be smaller in a sample of buyers. But suppose that parents offer support to their children for housing in general (rent or purchase) and that the children then decide whether to buy or not. In this case, excluding the right-censored observations could increase the effect of transfers on saving time.

The survey contains information on in-kind transfers received during the rental period in the form of free availability of parents' and relatives' properties. A significant fraction of renters live rent-free in houses owned by parents, relatives or friends, an important form of in-kind transfer unambiguously earmarked for housing. We construct a measure of the cumulative amount of such transfers by capitalizing at the annual real interest rate of 2 percent the 1991 flow of imputed rents over the entire period in which the household has lived in these apartments.[12]

In principle, both renters and owners receive other unconditional monetary transfers that could affect home purchase decisions. Our data do not allow us to measure these transfers. For instance we do not know if renters regularly receive monetary contributions to pay the rent. However, we have good reason to believe that such transfers play a minor role. In a typical SHIW survey not more than 2 or 3 percent of households receive either monetary gifts or loans from relatives and friends.[13] Guiso and Jappelli (1991) report that the fraction is similar in the 1985 Survey of Households' Structure and Behavior carried on by the National Statistical Institute (ISTAT). Furthermore, for households receiving unconditional monetary transfers, renting was difficult in the 1970s and 1980s. Due to tight rent control regulation and limits on the ability of landlords to evict tenants at the expiration of the contract, the supply of housing in the rental

[12] For an individual who has been living in such houses for t years, the total amount of in-kind transfers received is $(1-1.02^t)/(1-1.02)\times R$, where R denote imputed rents as of 1991. Information on the year in which the household first moved in the apartment where he/she currently lives is also available in the 1991 SHIW, see Appendix.

[13] For instance, in the 1989 Survey of Household Income and Wealth 1.7 percent of the households surveyed received gifts or loans from relatives or friends. In 1987 the proportion was 2.6 percent. About 20 percent of these transfers were loans, the other 80 percent gifts.

market shrunk considerably; at the same time, a small and extremely expensive black market emerged.[14]

The main drawbacks of the earmarked transfer indicator is that we miss the year in which the transfer was received and that rent support received during the rental period is not observed for homeowners. A different section of the 1991 SHIW asks each member of the household to report the year and amount of bequests and gifts received in the past from parents or other relatives, irrespective of whether the transfer was earmarked for home purchase. This variable, which we denote as *general transfers*, is used by Guiso and Jappelli (1996) to compute the aggregate share of transfers in total wealth. Table 2 shows that on average each household received 50.4 million lire (equivalent to $31,500 in 1995), 24.3 percent of total net worth (20.2 percent in bequests plus 4.1 percent in gifts). Capitalizing bequests and gifts at a net real interest rate of 2 percent, the share of transfer wealth comes to 35.8 percent (29.5 percent bequests plus 6.3 percent gifts). The estimate of the share of earmarked transfers on real estate wealth reported in Table 1 is remarkably close to that of general transfers on total wealth (real estate plus financial assets and durable goods) reported in Table 2. This is reassuring, given that the two sources of information are based on completely different questions and are therefore not necessarily consistent. However, a comparison between Table 1 and 2 also shows that general transfers miss a considerable amount of small transfers: about 6 percent reports receiving general transfers, as opposed to 12 percent reporting earmarked transfers.

In sum, for general transfers we know not only transfer amounts ever received in the past, but also the *year* of the transfer for both renters and owners. The main problem is that general transfers is not as good a measure of transfers as earmarked transfers, which is based on a detailed section of the questionnaire on housing, stimulating people to think much harder about

[14] Since the mid 1970s rents have been subject to ceilings well below the market rate. The law has also given tenants the option of staying in the house essentially without limits. If a landlord wanted to evict a tenant, he had to apply to court. Since 1983 only 20 percent of the applications for eviction have been approved. Even in 1996, three years after the approval of a law that gradually liberalizes the rental market, over a million tenants whose contract has expired have obtained an extension. As a consequence of regulation, in the 1980s the supply of housing available for renting essentially dried out, especially in large metropolitan areas. A small black market with exceptionally high prices, ranging from 3 to 5 or more times the controlled rent, developed while tenant-occupied houses sold at a discount of 30 or 40 percent of the price of unoccupied housing.

home purchase, and eliciting information also on price discount, help for downpayments, and rent support. Since neither of the two indicators is perfect, we use both in the estimation and check the sensitivity of the results to the definition of transfers.

TABLE 2

TOTAL TRANSFERS AS A SOURCE OF WEALTH ACCUMULATION

	Proportion receiving transfers	Amount (sample average)	% of net worth (ratio of averages	% of net worth (average ratio)
Transfers				
Bequests	20.3	41.9	20.2	18.8
Gifts	5.6	8.5	4.1	6.0
Total transfers	25.9	50.4	24.3	24.8
Capitalized transfers				
Bequests	20.3	61.2	29.5	29.4
Gifts	5.6	13.1	6.3	8.3
Total transfers	25.9	74.3	35.8	37.6

Notes. All averages are computed using sample weights and are based on the 1991 SHIW sample of 8,188 households. Capitalized transfers are computed assuming a net real interest rate of 2 percent. Financial assets are imputed from the flow of financial income.

4. *Empirical results*

We estimate the impact of transfers on saving time restricting the sample in several ways. The behavior of households that receive the house as a bequest - especially if bequests are unintended - may be different from that of the rest of the population; these households are therefore dropped.[15] Young working individuals still living as dependents with their families do

[15] Also excluded are households that received the property as a bequest or as a gift from the spouse, given that we do not know how the donor acquired the property.

not appear as independent households in the survey.[16] Since young, independent consumers tend to be wealthier than average, possibly thanks to financial support from the family, householder younger than 25 at the date of the purchase are excluded from the estimation. This final restriction thus leads to an underestimate of the impact of transfers on saving time. On the other hand, we do not want the results to be driven by a relatively small number of households receiving large transfers early in life.

In principle, we would like to select only first-time buyers and households with plans to purchase a house. Repeat buyers, in fact, face rather different constraints in moving than renters; and households who do not plan to purchase a house may have different preferences and/or opportunities than the rest of the population. The information in the SHIW, however, does not distinguish between these groups. Householders over age 55 are excluded as more likely to have moved in the past and hence to qualify as repeat buyers. Since this limit is arbitrary, we test for the robustness of the results using age thresholds of 50 and 40.

Also excluded are households with missing observations for the year of home purchase (if home owners), occupation, sector of activity or education. Since a complete series on regional house prices is available only starting in 1967, we drop all households whose purchase was before that year, regardless of age. After these exclusions, the sample reduces to 3,536 households, currently aged 26 to 55. Complete saving time spells are observed for 1,825 households who purchased the house between 1967 and 1991 and older than 25 at the time of purchase. The sample also includes 1,711 renters, for which saving time is right censored.

We use several definitions of saving time. In our basic specification we define saving time as "age at acquisition less age at first employment": according to the life-cycle model individuals start saving when they start to earn income. For renters saving time spells are censored; for them saving time is therefore "age in 1991 less age at first employment". We experiment with two other measures of saving time for owners: "age at acquisition less 25", on the assumption that household formation coincides with the decision to buy a house and with the beginning of the saving plan (25 is the median

[16] In 1991 the share of income recipients under 30 years old was 19.8 percent, while the share of household heads that young was a tiny 7.6 percent.

age at marriage)[17]; and "age at acquisition less *max*(years of education +6, 18)", on the assumption that people start saving for home purchase immediately after school. The econometric results are not affected by the different definitions. We thus report full results of the basic specification and a brief summary of the results using different specifications.

Saving time exhibits considerable sample variability, ranging from 1 for those who purchased after only one year of work, to 34 for someone who started working at age 20 and purchased at age 55. For most households saving time is substantial, in sharp contrast to the experience of other countries. For instance, in the United States it averages between 2 and 3 years, depending on the particular sample and definition used (Engelhardt, 1994). In contrast, among Italian homeowners, fewer than 15 percent have saving time shorter than 3 years. As noted, this long saving time is presumably due to limited access to credit during the 1967-91 period: most households were prevented or discouraged from borrowing and had to rely on accumulated savings; even when they could borrow, the downpayment was generally higher than 50 percent.

Since we use a cross-section of households that purchased houses between 1966 and 1991, we cannot rule out the possibility that saving time may be contaminated by time and cohort effects. For instance, it is possible that, given age, earlier cohorts have a shorter saving time, due to a lower price-income ratio for housing, preferences or other effects. Cohort effects in tenure decisions are not identified in a single cross-section.[18] To assess the potential bias from cohort effects, we compare the cross-sectional age-tenure profile with an estimate of the cohort-adjusted home ownership profile.

The cohort-adjusted profile is obtained from the fitted values of a logit regression against a fifth-order polynomial in age and 10 cohort dummies in 5-year bands (see the Appendix for details). The adjusted age profile, plotted in Figure 1, is similar to the cross-sectional profile, except possibly for older households, suggesting that the age profile is only slightly contaminated by cohort effects in tenure decisions. In fact, the joint

[17] Source: ISTAT, *Annuario di Statistiche Demografiche* (1980).

[18] In principle, it would be preferable to use panel data, but detailed information on transfers earmarked for real estate is available only in 1991.

hypothesis that the 10 cohort dummies are equal to zero cannot be rejected at the 5 percent significance level.

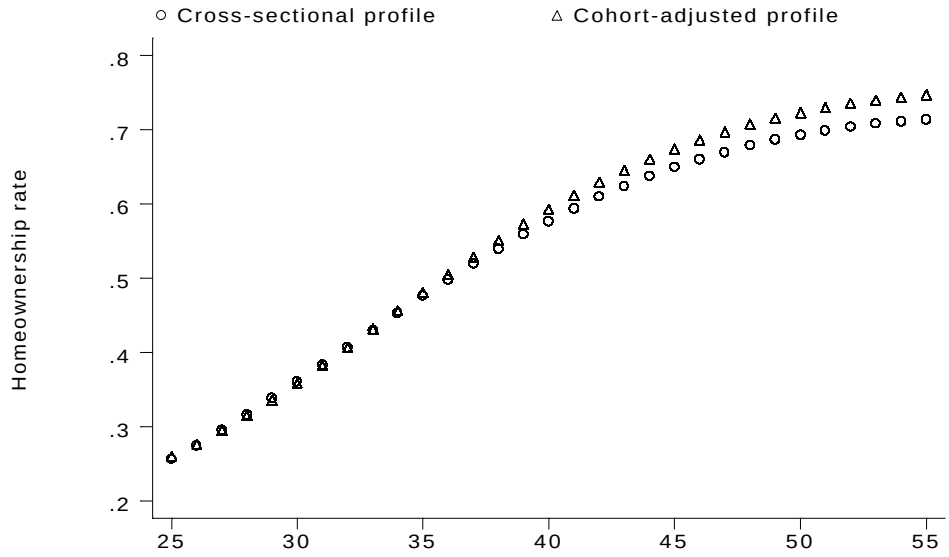

FIGURE 1

THE CROSS-SECTIONAL AND COHORT-ADJUSTED HOMEOWNERSHIP PROFILE

The figure plots with diamonds the cross-sectional homeownership rate by age and with stars the cohort-adjusted profile. The cross-sectional profile is estimated by the fitted values of a logit regression against a fifth-order polynomial in age. The data set merges 6 independent cross-sections (the 1984, 1986, 1987, 1989, 1991, 1993 and 1995 SHIW), a total of about 50,000 observations. The cohort-adjusted profile is estimated on the same data set by the fitted values of a logit regression against a fifth-order polynomial in age and 10 cohort dummies in 5-year bands.

Table 3 reports means for selected variables for the total sample, owners and renters; each of these groups is further divided into transfer recipients and non-recipients. The construction of permanent income, i.e. the average present discounted value of households' earnings at the time of the purchase, is described in the Appendix. We construct an index of the relative price of housing at the time of the purchase deflating the nominal price of housing per square meter by the consumer price index; the relative price of housing is available starting in 1967 for 95 provinces and three types of location (center, semi-center and outskirts). There is substantial cross-sectional and time variation in the relative price of housing, with a strong tendency to rise in the largest metropolitan areas (Rome, Milan, Naples), and in the second half of the 1980s.[19]

Within the group of homeowners, recipients have higher permanent income and higher education and purchase larger and more expensive homes than non-recipients. Saving time is about two years shorter for recipients. A proper test, however, must control for other factors affecting the timing of purchase, as well as for censored saving time spells. We accordingly relate saving time to a set of personal characteristics, permanent income and transfer amounts. House prices, area dummies and city size indicators proxy for differences in the conditions of the local housing markets.

Ideally, each of these conditioning variables should refer to the time of purchase. Except for transfers and the relative price of housing, however, the variables that we observe in the cross-section refer to 1991. Thus we must assume that education and broad categories of sector and occupation of the household head have remained constant since the date of purchase. We also assume that 1991 family size proxies for the expected family size at the time of the purchase.

[19] For censored observations (renters) the relative price of housing refers to 1991; for completed spells (owners) the price refers to the time of the purchase.

TABLE 3

SAMPLE CHARACTERISTICS BY HOMEOWNERSHIP AND TRANSFERS RECEIVED

	Total sample	Homeowners		Renters	
		Transfer=0	Transfer>0	Transfer=0	Transfer>0
Age at purchase	37.67	35.83	33.97	40.78	37.36
Age at first employment	21.46	21.39	21.73	21.42	21.40
Saving time	16.23	14.45	12.26	19.36	15.96
Home value	-.-	180.80	188.7	-.-	-.-
Demographics					
Education	9.79	9.67	10.73	9.53	9.83
Male	0.91	0.94	0.94	0.88	0.91
Family size	3.55	3.69	3.61	3.46	3.28
Sector					
Agriculture	0.05	0.05	0.04	0.04	0.08
Industry	0.33	0.34	0.31	0.36	0.29
Service	0.29	0.29	0.28	0.27	0.32
Public Administration	0.33	0.32	0.37	0.33	0.31
Occupation					
Laborer	0.36	0.31	0.29	0.42	0.36
Clerical	0.28	0.28	0.33	0.27	0.29
Manager, professional, entrepreneur	0.13	0.15	0.15	0.11	0.08
Self-employed	0.23	0.26	0.23	0.20	0.27

to be continued

	Total sample	Homeowners		Renters	
		Transfer=0	Transfer>0	Transfer=0	Transfer>0
Regional dummies and prices					
North	0.42	0.43	0.35	0.47	0.29
Centre	0.19	0.18	0.26	0.17	0.22
South	0.39	0.39	0.39	0.36	0.49
Relative price of housing	2.05	1.64	1.71	2.52	2.18
City size					
< 10,000	0.16	0.17	0.21	0.12	0.23
10,000-100,000	0.20	0.22	0.19	0.17	0.29
100,000-500,000	0.46	0.45	0.44	0.49	0.38
> 500,000	0.18	0.16	0.16	0.22	0.10
Resources					
Permanent income	31.41	32.84	33.54	29.71	29.46
Transfers for home purchase	19.07	0.00	88.70	67.38	0.00
Observations	3,536	1,275	550	1,434	277

Notes. For owners, saving time is defined as age at acquisition less age at first employment. For renters, age at acquisition is replaced by current age. Observations excluded are: households not reporting the year of acquisition or the value of the house (if homeowner), those with heads currently younger than 25 or older than 55, those that purchased the house before 1967, those that received the house as a bequest, and those with missing values for occupation or sector. The real price of housing (per square meter, deflated by the CPI), permanent income and transfers are expressed in millions of 1991 lire.

Table 4 reports basic information on saving time. For our survival analysis, buying a house is considered a “failure” and remaining a tenant is “survival”. We also report the cumulative failure function, i.e. the probability of purchasing a house within any time interval. The median of this distribution is the value corresponding to 0.5021 of the failure function (20 years). It is worth noticing that this estimate of the median of the

distribution of saving time spells takes right-censoring into account. The last column of Table 4 reports the Kaplan-Meier estimates of the hazard function, i.e. the non-parametric estimates of the probability of buying in any time interval. This is defined as the number of buyers in any time interval divided by the population of renters in that period. The hazard, which is plotted in Figure 2, increases slowly up to time 25; afterwards, it exhibits some noise, with an apparent decline between t=25 and t=30, and a further increase for the longest saving spells. The shape of the hazard points to the importance of allowing for duration dependence; the declining hazard between t=25 and t=30 also shows that such dependence may be non-monotonic. Thus, in the empirical estimates we will allow for the most flexible specification of the hazard rate.

We relate the hazard rate $h(t)$ to a set of observable characteristics by estimating a Cox proportional hazard model of the form:

$$h(t) = h_0(t) \exp(X'\beta)$$

where $h_0(t)$ is the baseline hazard rate at time t for the covariate vector o, β a vector of coefficients and X a matrix of observable variables. The model assumes only that $h(t)/h_0(t)$ is constant over time. The advantage of this semiparametric estimator is that no assumption is made with respect to the baseline hazard. The drawback, of course, is that it only estimates a hazard rate, not the quantitative impact of an independent variable on saving time.

TABLE 4
EMPIRICAL CUMULATIVE FAILURE FUNCTION AND HAZARD RATE

Saving time (years)	Beginning total n_j	Buyers d_j	Renters (censored) m_j	Cumulative failure function $1-\Pi_{k}^{j}\frac{n_k-d_k}{n_k}$	Hazard rate $\frac{d_j}{n_j}$
1	3,536	34	10	0.0096	0.0096
2	3,492	16	10	0.0142	0.0046
3	3,466	33	10	0.0235	0.0095
4	3,423	37	10	0.0341	0.0108
5	3,376	36	18	0.0444	0.0107
6	3,322	86	44	0.0691	0.0259
7	3,192	94	54	0.0965	0.0294
8	3,044	101	44	0.1265	0.0332
9	2,899	105	66	0.1582	0.0362
10	2,728	124	71	0.1964	0.0455
11	2,533	101	75	0.2285	0.0399
12	2,357	105	67	0.2628	0.0445
13	2,185	98	79	0.2959	0.0449
14	2,008	87	65	0.3264	0.0433
15	1,856	100	62	0.3627	0.0539
16	1,694	77	62	0.3917	0.0455
17	1,555	77	55	0.4218	0.0495
18	1,423	54	47	0.4437	0.0379
19	1,322	68	65	0.4723	0.0514
20	1,189	67	50	0.5021	0.0563
21	1,072	55	74	0.5276	0.0513
22	943	45	57	0.5502	0.0477
23	841	43	74	0.5732	0.0511
24	724	37	53	0.5950	0.0511
25	634	36	61	0.6180	0.0568
26	537	28	58	0.6379	0.0521
27	451	21	40	0.6548	0.0466
28	390	15	41	0.6680	0.0385
29	334	13	50	0.6810	0.0389
30	271	7	44	0.6892	0.0258
31	220	10	51	0.7033	0.0455
32	159	7	41	0.7164	0.0440
33	111	7	35	0.7343	0.0631
34	35	1	40	0.7381	0.0145

Notes. For owners, saving time is defined as age at acquisition less age at first employment. For renters, age at acquisition is replaced by current age. The table displays the number of households entering each time interval j (n_j), the number of households that have purchased a house after j years (d_j) and the number of renters observed in each time interval (m_j). The cumulative failure function is defined as one minus the cumulative survival function, i.e. the probability that an individual in interval j survives to interval j+1. The hazard rate is the probability of purchasing after j years conditional on not having purchased before j.

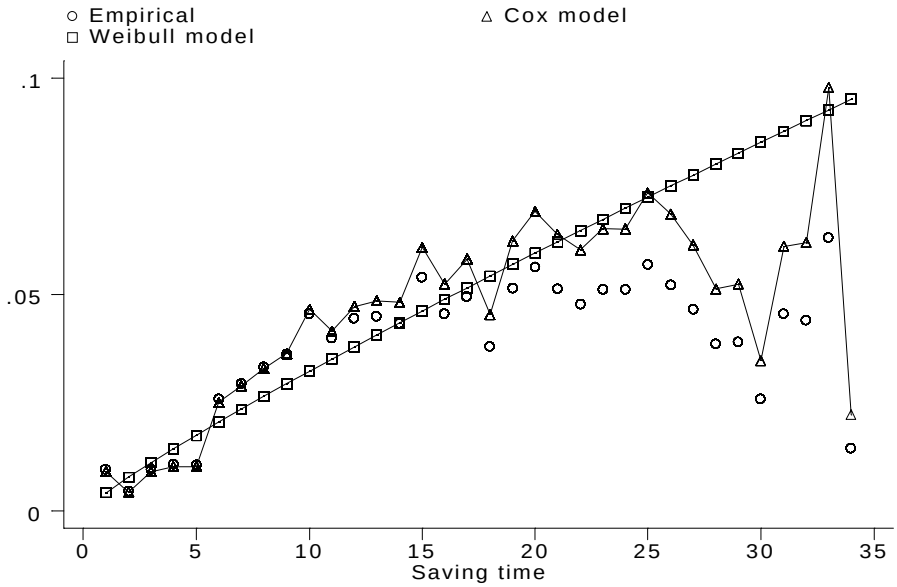

FIGURE 2

THE HAZARD RATE

The figure plots three alternative estimates of the hazard rate (the probability of purchasing a house in interval *j* conditional on not having purchased a house before *j*) against saving time. The dots represent the empirical hazard rate as estimated in Table 3. The broken line is the Kaplan-Meier estimate of the baseline hazard from the Cox proportional hazard model reported in Table 4. The line with triangles is the baseline hazard estimated by the Weibull regression in Table 4. This is computed as $\lambda_o p(\lambda_o p)^{p-1}$, where $\lambda_o=(1/M)(\ln 2)^{1/p}$ and M is the median of the survival distribution (Greene, 1993, p. 720).

The results are reported in Table 5. The coefficients measure how the logarithm of the relative hazard $h(t)/h_0(t)$ is affected by a unit change in the explanatory variable.[20] Thus, a positive coefficient indicates that the effect of the variable is to increase the hazard, and therefore to reduce saving time. Saving time is lower for men and falls with education. Larger households

[20] It may be easier to interpret the coefficients in terms of hazard ratios, rather than in terms of the log of the hazard rate, i.e. $\exp(\beta)$ rather than β. For instance, for education, the hazard estimate in Table 4 is 1.051, i.e. each year of education increases the relative hazard by 5.1 percent.

have longer saving time spells, presumably because, other things being equal, a larger family requires a more expensive home. The sector, occupation, regional and area dummies are not significantly different from zero. Households living in the Center and in the South have shorter saving time than those living in the North. For residents of large metropolitan areas saving time is significantly longer than for small towns and rural areas.

TABLE 5
THE DETERMINANTS OF SAVING TIME. FULL SAMPLE ESTIMATES

	Cox Model		*Weibull Model*	
	Coefficient	Standard error	Coefficient	Standard error
Demographics				
Education	0.0534	0.0078	0.0587	0.0077
Male	0.2746	0.1074	0.2978	0.1075
Family size	-0.0423	0.0225	-0.0446	0.0224
Sector				
Agriculture	0.0328	0.1203	-0.0049	0.1203
Service	0.0672	0.0632	0.0362	0.0632
Public Administration	0.0382	0.0641	0.0653	0.0640
Occupation				
Clerical	0.0382	0.0735	0.0399	0.0736
Manager, professional, entrepreneur	0.0883	0.0964	0.0953	0.0962
Self-employed	0.1023	0.0728	0.1084	0.0728
Regional dummies and prices				
Centre	0.2994	0.0658	0.3093	0.0658
South	0.3245	0.0628	0.3327	0.0627
Relative price of housing	-0.6507	0.0393	-0.6713	0.0396
City size				
< 10,000	0.0522	0.0868	0.0749	0.0868
10,000-100,000	-0.0989	0.0829	-0.0886	0.0828
100,000-500,000	-0.2334	0.0732	-0.2359	0.0731

to be continued

	Cox Model		*Weibull Model*	
	Coefficient	Standard error	Coefficient	Standard error
Resources				
Permanent income	0.0101	0.0034	0.0093	0.0034
Transfers	0.0023	0.0003	0.0023	0.0003
Duration parameter (ln p)	-.-	-.-	0.6330	0.0199
χ^2 (17)		699.80		746.15
Total observations		3,536		3,536
Censored observations		1,711		1,711
Median of the survival distribution		20		20

Notes. The coefficients indicate the effect of the independent variables on the logarithm of the relative hazard, $\lambda(t)/\lambda_0(t)$. For the Cox model the base hazard is estimated non-parametrically (see Figure 2). For the Weibull model the base hazard is t^{p-1}, where p is the estimated shape parameter. For owners, saving time is defined as age at acquisition less age at first employment. For renters, age at acquisition is replaced by age in 1991. Observations excluded from the estimation are: households not reporting the year of acquisition or the value of the house, households with heads currently younger than 25 or older than 55, those that purchased the house before 1967, those that received the house as a bequest, and those with missing values for occupation or sector. The real price of housing, permanent income and transfers are expressed in millions of 1991 lire. Attributes excluded from the regressions are: employed in the industrial sector, operatives, resident in the North, living in cities over 500,000 inhabitants. The Weibull regression also includes a constant term.

The effect of permanent income on saving time should depend on the nature of borrowing constraints. Greater resources increase the size of the house that the consumer wants to buy and stimulate higher borrowing: saving time will thus increase if there is an absolute limit on borrowing, or decrease if mortgage availability is proportional to income. The estimated coefficient of permanent income is positive and significantly different from zero, suggesting that higher permanent income is associated with shorter saving time, other things equal. The relative price of housing is an important determinant of saving time. Increasing the real price of housing by 1 million lire per square meter - about one standard deviation away from the mean - reduces the hazard ratio by exp(-0.657)=51.8 percent.

The coefficient of transfers is positive and is very precisely estimated. Thus transfers reduce saving time, confirming the descriptive analysis of Table 2. The average transfer is about 80 million (see Table 3). Receiving an 80-million-lira transfer increases the hazard rate by 20 percent, $\exp(80\times0.0023)=1.20$.

The baseline hazard of the Cox model can be estimated non-parametrically as a weighted Kaplan-Meier estimator (Kalbfleisch and Prentice, 1980, p. 84-87). This is plotted in Figure 2 as a broken line. This conditional hazard rate is seen to track the unconditional hazard estimated with the raw data quite well: controlling for the covariates does not greatly affect the unconditional hazard, and confirms that saving time is characterized by (possibly non-monotonic) duration dependence. In the case at hand, an increasing hazard agrees with intuition. The housing market is characterized by borrowing constraints and indivisibilities in purchases. If a house can only be purchased by accumulating own savings, then only a very good but unlikely realization of income or a significant drop in house prices allow early purchase. Chances of meeting the minimum price, and thus buying, increase with time because savings accumulate. The temporary fall in the hazard rate after t=25 reflects either noise, or the fact that older households are increasingly discouraged from buying.[21]

Until t=25 the estimated hazard is relatively smooth, so that for the entire sample a Weibull parametrization of the hazard rate may not be inappropriate. The Weibull model assumes a parametric form for the baseline hazard, i.e. $h_0(t)=t^{p-1}$, where p is the shape parameter, indicating whether the baseline hazard is constant (p=1), increasing (p>1), or decreasing (p<1). The results are also displayed in Table 5 It is seen that the coefficients estimated by the Cox model are very close to the Weibull coefficients. In particular, we obtain the same estimate (up to the fourth decimal point) for the coefficient of transfers. The baseline hazard, evaluated at the median of the survival distribution, is also plotted in Figure 2, confirming that for a wide range of saving time the Weibull parametrization describes duration dependence quite well.

[21] The coefficient estimates and the baseline hazard obtained with the Cox model are very similar to those estimated by the ordered logit semi-parametric estimator for duration data proposed by Han and Hausman (1990). For brevity the ordered logit estimates are not reported.

As mentioned, one interpretation of duration dependence is that borrowing constraints force households to save prior to purchase. Yet other interpretations of the shape parameter cannot be ruled out. Lancaster (1979) and Kiefer (1988) point out that p is, at least in part, an index of specification error, measuring the extent of unrecognized heterogeneity of our sample of individuals. Unobserved characteristics of households, such as attitudes toward savings or preference for home ownership rather than renting, would have such an effect.

A standard test for heterogeneity of the individual survival distributions can be implemented modifying the hazard function. Assuming that $h(t)=t^{p-1}S(t)^{\theta}\exp(X'\beta)$, where $S(t)=[1+\theta t^{p}]^{-\theta^{-1}}$, and $1/\theta$ is the variance of the gamma distribution (Greene, 1993, p. 724). In the absence of heterogeneity (θ=0), the hazard reduces to the Weibull model. The hypothesis is not rejected in our regression because we obtain small and insignificant values for θ; the estimates of the other coefficients are not affected. The result is of course valid only if heterogeneity can be parametrized in the survival distribution in this very specific way.

The Weibull coefficients allow us to assess the quantitative impact of transfers on saving time. The first panel of Table 6 reproduces the transfer coefficient of the basic specification of Table 5 An 80-million-lira transfer decreases saving time by 10.5 percent. Evaluated at the median of the survival distribution (20 years), this implies a cut in saving time of 2.1 years. As will be seen, this result holds for different sample definitions and alternative measures of saving time, and when one takes into account the potential endogeneity of transfers.

5. *Sensitivity of the estimates*

The assumption that our selected sample includes only first-time buyers is a rather strong one. Unfortunately, we lack the information needed to distinguish repeat-buyers; but under our assumption if, say, a 55 year-old who started working at age 25 has just moved to a new house, selling the old one, saving time is automatically set equal to 30. Thus, saving time may overestimate the renting period, especially for the oldest portion of the sample; of course the problem is less serious for young households, whose probability of being repeat buyers is low.

The second panel in Table 6 explores the sensitivity of the results when households headed by individuals older than 40 are excluded (for brevity, in this and the following cases only the transfer coefficient is reported). The main results are unaffected: evaluated at the median, an 80-million-lira transfer cuts saving time by 1.56 years with respect to those receiving no transfers.[22]

TABLE 6
THE EFFECT OF TRANSFERS ON SAVING TIME. SENSITIVITY ANALYSIS

Specification	*Cox model*	*Weibull model*
Basic specification		
Coefficient of transfers	0.0022	0.0022
Standard error	0.0003	0.0003
Effect of an 80-million-lira transfer		0.0940
Number of observations: 3,536. Censored:1,711. Median S:20		
Excluding age> 40		
Coefficient of transfers	0.0022	0.0023
Standard error	0.0004	0.0004
Effect of 80-million-lira transfer		0.0920
Number of observations: 1,382. Censored: 867. Median *S*: 17		
Excluding purchases before 1985		
Coefficient of transfers	0.0026	0.0027
Standard error	0.0004	0.0003
Effect of 80-million-lira transfer		0.1050
Number of observations: 2,437. Censored: 1,711. Median *S*: 31		
Excluding extended families		
Coefficient of transfers	0.0022	0.0022
Standard error	0.0003	0.0003
Effect of 80-million-lira transfer		0.0950
Number of observations: 3,274. Censored: 1,593. Median *S*: 20		
Excluding loan-to-value ratio>0.2		
Coefficient of transfers	0.0022	0.0022
Standard error	0.0003	0.0003
Effect of 80-million-lira transfer		0.0950
Number of observations: 3,362. Censored: 1,711. Median *S*: 21		

to be continued

[22] Similar results are obtained excluding households with heads older than 45 years.

Specification	*Cox model*	*Weibull model*
Saving time = age at purchase - max [years of education+6; 18]		
Coefficient of transfers	0.0025	0.0026
Standard error	0.0003	0.0003
Effect of an 80-million-lira transfer		0.0890
Number of observations: 3,536. Censored: 1,711. Median *S*: 23		
Time varying regressors		
Coefficient of transfers		0.0012
Standard error		0.0004
Number of observations: 48,972		

Notes: The table reports the effect on saving time of increasing transfers by 80 million lire (about the average transfer received by home buyers). The effect is computed as $80\times(b/p)$, where b is the estimated coefficient of transfers and p the estimated shape parameter in the Weibull regressions. Transfers are measured in millions of 1991 lire. The medians of the survival distributions are adjusted for right-censoring.

The estimates may suffer from a different selection bias. The relatively elderly householders that acquired homes early on (say, in 1967) report relatively short saving times (to be included in the sample such a household must have purchased a house when the head was relatively young). Thus, restricting the sample to the relatively young tends, by construction, to bias downward the estimated saving time because the age distribution of home acquisition around 1967 is truncated to the right. This selection of older householders into the shorter saving time brackets may interact with the regressors.

This problem is compounded by our implicit assumption that access to credit does not vary over time. As mentioned, increased borrowing capacity generally reduces saving time. Even if few households had access to credit over the period 1967-91, as witnessed by the low level of mortgage loans, the unobserved variability of credit ceilings over time and across households may affect saving behavior and the reliability of the estimates.[23]

[23] Average saving time for households with outstanding mortgage loans does not differ significantly from that for households without mortgages. However, this comparison is not entirely appropriate, because current outstanding mortgage loans convey little information on the

We perform several experiments to explore how the sample construction and unobserved credit market conditions might affect the estimates. We restrict the sample to the 726 most recent buyers (1985-1991). Since this drops a disproportionate number of short saving times, the median of the distribution is higher (31 years). The effect of transfers, however, is not greatly affected, as is shown in Table 6. Nor are the basic results changed by excluding households with outstanding mortgage debt greater than 20 percent of the value of the house (174 observations).

For several reasons, extended families, i.e. households sharing living arrangements with parents or other relatives, may behave differently from nuclear families. Intergenerational transfers from the elderly to the young may take place within the extended family but they are not recorded in the survey since only transfers received by the household from outside are reported.[24] The transfers recorded in the survey may have been received by a parent living in the extended family, and may have affected their home purchase decision while being totally unrelated to the decision of the younger household head. The intergenerational links may be different in extended families.[25] Finally, in these households it is not at all obvious who is the decision maker. We check the sensitivity of the estimates when 262 extended families are dropped from the sample. As is shown in Table 6, the effect of transfers for nuclear families are similar to those obtained in the full sample estimates.[26]

Another criticism of our estimates is that we do not properly control for the timing of transfers and, more generally, for the possibility of time-varying regressors. As mentioned in Section 3, in case of general transfers we know not only the amount, but also the year in which the transfer was received. This allows us to estimate a Cox proportional hazard model with

mortgage that was granted at the time of the purchase and also because many mortgages finance home improvements or repairs and may be granted long after the purchase.

[24] Ando, Guiso and Terlizzese (1994) use the panel component of the 1987 and 1989 SHIW and show that movements of elderly persons into and out of younger households have strong effects on the households' net worth.

[25] Furthermore, the composition of extended families is more likely to have changed since the time of the purchase.

[26] If saving time is defined as “age at acquisition less 20” or as “age at acquisition less *max*(years of education+6, 18)” the effect of receiving an 80-million-lira transfer is also about 2 years.

time varying regressors.[27] Using the same sample and specification as in Table 4, we find that receiving an 80 million transfer increases the hazard by 12 percent. The effect is somewhat attenuated with respect to the baseline specification. Howeever, the difference between the two sets of coefficients reflects not only the difference between the two estimation procedures, but also between the different measures of transfers (recall that in Table 4 we lack information on the timing of transfers).

All estimates presented so far may also be affected by bias arising from the endogeneity of transfers. In fact, donor's decisions may partly depend on recipients' behavior. The direction of this bias is ambiguous a priori. For instance, suppose that households with strong desire to purchase a house (and therefore short saving time) deliberately ask for more transfers from their parents and take successful actions to trigger the transfer decision. This behavior would imply a negative correlation between saving time and transfers. Alternatively, consider a household with relatively long saving time; if long saving time signals poor resources, then parents may give more to their less fortunate children. This will produce a positive correlation between saving time and transfers.

Controlling for the endogeneity bias requires a model of transfers, i.e. information on donors' resources and characteristics. Since the 1991 SHIW does not contain such information, we rely on the 1991 sub-sample that was also interviewed in 1993. The 1993 SHIW lacks data on transfers earmarked for real estate but has data on the educational attainment, sector and occupation of the parents, sisters and brothers of the household head and spouse, and information on the income of the household interviewed relative to that of the parents.

The coefficients in Table 7 are based on two-stage estimation. Using a Tobit regression, in the first stage we relate transfer amounts to the same variables included in the second stage and to proxies for the recipients'

[27] For brevity, this additional set of results are available on request. The effect of permanent income is also similar with respect to the estimates reported in Table 4. The effect of house prices is instead considerably attenuated. Increasing the real house price by 1 million lire per square meter (about one standard deviation from the mean) reduces the hazard by only 20 percent. The reason is that in this specification we explicitly take into account that house prices is a time-varying regressor, i.e. prices vary by year, province, and house type. Using time-varying regressors and general transfers we perform a similar sensitivity analysis as described in this section (excluding age greater than 40, purchases before 1985, extended households, etc.), and in all cases the effect of transfers is not much affected.

characteristics, donors' resources and dummies for the presence of brothers and sisters outside the household.[28] Our identification assumption is that transfers are the only channel between parents' characteristics (or income) and saving time. This assumption rules out, for instance, that a family with a taste for thrift and a high income induces children to reduce saving time independently from transfers.

TABLE 7
THE EFFECT OF TRANSFERS ON SAVING TIME: 1991-93 PANEL

	Cox Model		*Weibull Model*	
	Coefficient	Standard error	Coefficient	Standard error
Demographics				
Education	0.0122	0.0143	0.0142	0.0143
Male	0.1031	0.1664	0.1049	0.1662
Family size	-0.0156	0.0384	-0.0141	0.0381
Sector				
Agriculture	-0.1121	0.1804	-0.1250	0.1807
Service	0.0443	0.0974	0.0395	0.0975
Public Administration	0.1138	0.0947	0.1085	0.0944
Occupation				
Clerical	0.0127	0.1064	0.0121	0.1065
Manager, professional, entrepreneur	0.0571	0.1437	0.0626	0.1433
Self-employed	-0.0394	0.1116	-0.0441	0.1118
Regional dummies and prices				
Centre	0.1420	0.1109	0.1324	0.1107
South	0.2977	0.0983	0.3015	0.0977
Relative price of housing	-0.5033	0.0559	-0.5116	0.0563
City size				
< 10,000	-0.1686	0.1548	-0.1616	0.1550
10,000-100,000	-0.3365	0.1514	-0.3323	0.1514
100,000-500,000	-0.3290	0.1307	-0.3281	0.1307

to be continued

[28] The complete list of variables included in the first stage is reported at the bottom of Table 7. First-stage results are not reported for brevity.

	Cox Model		*Weibull Model*	
	Coefficient	Standard error	Coefficient	Standard error
Resources				
Permanent income	0.0095	0.0050	0.0086	0.0049
Transfers	0.0038	0.0011	0.0042	0.0012
Duration parameter (ln *p*)	-.-	-.-	0.634	0.0279
χ^2 (17)		265.96		285.12
Total observations		1,557		1,557
Censored observations		706		706
Median of the survival distribution		20		20
Effect of an 80-million-lira transfer				0.1782

Notes. The coefficients measure the effect of the independent variables on the logarithm of the relative hazard, $h(t)/h_0$. For the Cox model the base hazard is estimated non-parametrically. For the Weibull model the base hazard is t^{p-1}, where p is the estimated shape parameter. The regressions use the predicted transfer amounts from a first stage Tobit regression. The first stage includes all variables of the second stage regressions, dummies for the educational achievement of the household head and of the spouse, dummies for the income of the head's and spouse's parents relative to that of the household; dummies for the occupation of the heads' parents, and dummies for the presence of brothers and sisters outside the household. Standard errors are not corrected for two-stage estimation. For owners, saving time is defined as age at acquisition less age at first employment. For renters, age at acquisition is replaced by age in 1991. Observations excluded from the estimation are: households not interviewed in 1993, households not reporting the year of acquisition or the value of the house, households with heads currently younger than 25 or older than 55, those that purchased the house before 1967, those that received the house as a bequest, and those with missing values for occupation or sector. The real price of housing, permanent income and transfers are expressed in millions of 1991 lire. Attributes excluded from the regressions are: employed in the industrial sector, operatives, resident in the North, living in cities over 500,000 inhabitants.

The results of the Cox and Weibull models are again similar. At the median, the effect of an 80-million-lira transfer is 17.8 percent, i.e. 3.56 years. Conditional on the validity of our instruments, this shows that taking the potential endogeneity of transfers into account leads to an upward revision of the effect of transfers on saving time. As we note above, one interpretation of the result is that households with long saving times self-select them into the large transfer group.

6. *The effect of transfers on home value*

As noted in Section 2, there are several possible uses of transfers: to reduce own savings (and possibly purchase sooner), to increase the size of the house and to reduce borrowing. We test the relative importance of these possibilities by regressing the 1991 value of the house against a set of demographic variables, permanent income and the amount of transfers received (expressed in 1991 lire). Since renters have not yet purchased a house, the coefficients are estimated by Tobit, and renters are treated as censored observations.

The results are reported in Table 8. Each additional lira of permanent income increases the value of the house purchased by about 4 lire. Each lira of transfers increases the value of the house by 0.7 lire (with a t-ratio of 10), thus reducing own savings by 0.3 lire. The results excluding householders older than 40 and restricting the sample to post-1985 buyers suggest an even larger impact on the value of the home (the coefficients of transfers are 0.82 and 0.89, respectively), and implicitly a smaller effect on own savings.

Can the effect of transfers on saving time be reconciled with the effect on house value? In 1991 average annual saving for renters is about 8 million lire.[29] Ruling out mortgage markets and assuming zero interest rate, for a household that is saving 8 million lire a year to purchase a house worth 80 million lire in 10 years, a transfer of 80 million lire (about the average transfer for recipients) makes it possible to buy a house worth 80 million immediately, a house of 160 million in 10 years or any feasible intermediate combination. Now suppose that the household purchases a house for 144 million lire (64 million of own savings + 80 million in transfers) in 8 years. Regressing saving time on transfers would indicate an effect of about 2 years (as in Table 4), and regressing the value of the house a coefficient (i.e., the change in the value of the house divided by the change in transfers) of 0.8, close to the point estimates reported in Table 8. This shows that the two sets of estimates in Tables 4 and 8 are broadly consistent.

[29] Average disposable income and consumption for renters between age 25 and 55 are respectively 34.5 and 26.7 million lire, resulting in saving of 7.8 million lire and a propensity to save of 22.6 percent.

TABLE 8

TOBIT ESTIMATES. DEPENDENT VARIABLE: VALUE OF THE HOUSE

	Total sample		Age< 40		Purchased after 1985	
	Coeff.	Standard error	Coeff.	Standard error	Coeff.	Standard error
Demographics						
Education	-1.79	1.24	0.80	1.43	2.72	2.08
Male	26.13	15.25	42.27	17.09	44.96	24.70
Family size	9.53	3.59	12.17	4.10	1.22	5.92
Sector						
Agriculture	-3.23	19.13	-3.98	23.19	32.14	31.40
Service	-11.12	9.95	-24.47	11.17	-13.56	16.43
Public Administration	-10.82	10.22	-13.26	11.44	-26.86	16.88
Occupation						
Clerical	38.93	11.54	52.49	13.04	27.23	19.23
Manager, professional, entrepreneurs	56.99	15.43	57.09	17.35	39.42	25.30
Self-employed	41.35	11.36	44.88	12.92	28.66	19.15
Region						
Centre	30.88	10.39	6.42	11.78	-16.66	17.95
South	8.98	9.99	6.83	11.31	9.13	16.53
City size						
< 10,000	-4.39	13.07	-17.06	14.82	30.88	22.35
10,000-100,000	-13.94	12.38	-11.89	14.05	19.12	20.90
100,000-500,000	-20.21	10.68	14.66	12.21	30.94	17.62
Resources						
Permanent income	4.63	0.56	4.30	0.64	5.79	0.95
Transfers	0.70	0.06	0.82	0.07	0.89	0.09
Total observations		3,536		1,382		2,437
Censored observations		1,711		867		1,711
Dependent variable mean (if owner)		183.18		165.38		177.96

Notes. The value of the house, permanent income and transfers are expressed in millions of 1991 lire. Observations excluded from the estimation are: households not reporting the year of acquisition or the value of the house (if homeowners), households with heads younger than 25 or older than 55 (40 in the second regression), those that purchased the house before 1967 (1985 in the third regression), those that received the house as a bequest, and those with missing values for occupation or sector. Excluded attributes are: employed in the industrial sector, operatives, resident in the North, living in cities over 500,000 inhabitants. Each regression also includes a constant term.

Our results indicate that the main effect of transfers is to increase the value of the house, not to shorten saving time. One way to explain this pattern is that donors act in a paternalistic way. Hall (1986) conjectures that family members often have the means to alleviate the borrowing constraints faced by their less fortunate relatives, but speculates that they rarely do so because families remain paternalistic long after their offspring reach adulthood. Parents do not let their young adult children consume out of their future income until they have proven themselves. For instance, they may be willing to help their children only once the latter have demonstrated the ability to save. To guarantee that the parents' objective is fulfilled, transfers should take place at the end of the saving period, once the potential home buyer has established a reputation for saving. Such behavior would be consistent with a small effect of transfers on saving time and a rather strong effect on the size of the house. Information on the exact timing of earmarked transfers (beginning, end or some intermediate stage of the saving program) is not available in the SHIW. A full understanding of the connection between home ownership and transfer motives could be obtained only from specific surveys containing data on the timing of transfers and offering detailed information on donors as well as recipients.

7. *Conclusions*

Bequests and inter vivos transfers are of considerable importance in home purchases: more than a third of Italian homeowners report having gotten the house itself as a gift or bequest or having received financial support in making the purchase. The share of total real estate wealth accounted for by earmarked transfers ranges from 25 to 35 percent, depending on the assumption about capitalization of transfers.

Regression estimates indicate that gifts and other inter vivos transfers earmarked for home buying shorten the saving period before home ownership and increase the value of the house purchased. In particular, a transfer of 100 million lire cuts saving time by about two years and increases the value of the house purchased by 60 to 70 million lire. Overall, these results are consistent with parents behaving in a paternalistic way, deliberately deferring the transfer to the end of the saving period in order to avoid negative incentive effects on the children's propensity to save.

Borrowing constraints reduce the consumption of the young, the average age at which people start saving and the aggregate saving rate. In principle, transfers earmarked for home purchase can shorten saving time, smooth recipients' consumption and weaken the saving-growth correlation. In practice, relatively few households receive help for home purchase; most rely entirely on own saving. And even among those who do receive help, transfers have a small effect on saving time. Overall, our results indicate that gifts are a poor substitute for efficient credit markets. On the basis of this finding, mortgage market imperfections remain a potentially powerful explanation of the high Italian aggregate saving rate and of its positive correlation with the rate of economic growth.

Appendix

Survey questions and definition of variables

A. Questions used to compute the share of earmarked transfers in real estate wealth

For each property, owned in full or in part, the following questions are asked

1. What is the share of the property owned by your household?

2.1 How did you acquire the property? (Purchased from parents or grandparents; purchased from other relatives; purchased from individuals, purchased from business; built by self; inherited from spouse; inherited from parents; inherited from others; received as a gift from spouse; received as a gift from parents; received as a gift from others).

2.2 In case the property was purchased from parents, grandparents or relatives, the property was purchased at market price? purchased below market price? If so, by what percentage of the price?

2.3 In case the house was purchased from individuals or business or built by self, how large was the financial contribution of parents and other relatives as a fraction of the purchase price (and, if any, of expenses relative to repairs and improvements)?

2.4 In case the house was inherited or received as a gift, did you pay inheritance taxes ? if yes, how much as a percentage of the value of the property?

3. When did you acquire this property?

B. The real price index for housing

The nominal price index for housing is drawn from the series provided by *Il Consulente Immobiliare* and kindly made available to us by Francesco

Nucci. The series measures the price of housing per square meter at the end of each half-year; it is available for 95 provinces and 3 categories of housing from 1967 to 1991. We use the end-of-period price for each year as the representative price for the year of purchase. The nominal price is deflated with the consumer price index (base 1991 = 100).

C. Permanent income

Permanent income is defined as the average present discounted value of the stream of future earnings. As in King and Dicks-Mireaux (1982), permanent income is estimated in two steps. Normal earnings are defined as the fitted value of a reduced form equation for the log of earnings, net of taxes and social security contributions. A first stage probit equation takes into account the probability of labor force participation and corrects for selection bias. Households with earnings above 5 million lire are assumed to participate in the labor force. The probit equation for participation includes two dummies for age (under 30 and over 50) and dummies for marital status, number of children, education and region. The reduced form for earnings includes a third-order polynomial in age, five dummies for schooling (none, elementary, junior high school, high school, university), marital status, occupation (operative and laborer; clerical; professional, manager and entrepreneur; self-employed), sector (agriculture; industry; services; public administration), 18 regional dummies, and the selectivity variable. The estimates are conducted on a sample that excludes households with heads older than 60 years.

Permanent income is then calculated by standardizing the fitted values of the reduced form regression for earnings at age 43 (the average age of household heads in the sample) and assuming that over the working life earnings grow at the constant productivity growth rate g; future earnings are then discounted at the constant rate r. It is assumed that the growth rate and the real interest rate are equal; this assumption is convenient because it implies that growth and discount rates “cancel each other out”, and that permanent income is independent of the retirement age.

The procedure implies that each cohort's income is $(1+g)$ times that of the previous cohort. Controlling fully for the possible bias arising from cohort effects requires a large number of cross-sections. As explained in the text,

information on transfers as a source of home acquisition is only available in the 1991 SHIW.

D. The cross-sectional and cohort-adjusted home ownership profiles

To estimate the cohort-adjusted home ownership profile we rely on a series of repeated cross-sections used by Jappelli (1998) in an analysis of wealth decumulation after retirement. The data set includes the 1984, 1986, 1987, 1989, 1991 and 1993 SHIW, a total of 44,792 observations. Year-cohort dummies are defined as follows: cohort 1 includes all households whose head was born between 1910 and 1914, cohort 2 those born between 1915 and 1919, and so on up to cohort 10, those born between 1955 and 1959. Households headed by persons born before 1910 or after 1959 are excluded. Also excluded are households with missing disposable income, disposable income or consumption less than 1 million lire or missing information for home ownership. The final sample covers 39,939 households.

The cross-sectional profile in Figure 1 is estimated by the fitted values of a probit regression on a constant and a fifth-order polynomial in age, treating all observations as a large cross-section. To obtain the cohort-adjusted profile we supplement the basic specifications with cohort and time dummies. Since age, cohort and time are perfectly collinear variables, we estimate the regression excluding the dummy for the oldest cohort and requiring that the year dummies be orthogonal to a time trend and sum to zero (Deaton and Paxson, 1994). The representative age-wealth profile (common to all cohorts) is plotted with triangles in Figure 1. Introducing the sex of the household head, regional dummies, and dummies for self-employment, schooling and family size as additional regressors does not greatly affect either the cross-sectional or the cohort-adjusted profile.

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