Second homes: households' life dream or (wrong) investment?

Marianna Brunetti
University of Roma Tor Vergata, CEFIN, & CEIS

Costanza Torricelli*
University of Modena and Reggio Emilia & CEFIN

Abstract

The objective of this paper is to detect possible real estate investment mistakes by investigating the uses that the households effectively make of their real estate other than the primary residence. To this end we use data drawn from the 2002-2012 Bank of Italy Survey on Household Income and Wealth (SHIW). Two are the main reasons for using Italian data: first the home ownership rate in Italy is very high, second the SHIW, besides picturing the socio-economic and financial conditions of the households, also provides plenty of information on household real estate. Specifically we focus on "second houses", which do not have a consumption use as primary residence. By means of a multinomial logit model we analyse the association between the uses of "second houses" and three sets of controls: demographic and socio-economic characteristics of the household, portfolio controls and specific features of the real estate. Our results highlight that unprofitable uses tend to be more clearly associated with male and less with singles, while second houses legally owned by the couple or by the patronymic family are generally holiday houses rather than left unused. Overall the final use of second houses is mainly driven by the type of legal owning of the dwelling and the real estate characteristics with inherited dwellings more likely to end up being unused.

Preliminary version, March 2014

Keywords: housing choice, household portfolio, rent

JEL Codes: D14, R21, C25

* Address for correspondence: Costanza Torricelli, Department of Economics, University of Modena and Reggio Emilia, Viale Berengario 51, 41121 Modena, Italy. E-mail: costanza.torricelli@unimore.it.

1. Introduction

Real estate investment represents most of the household wealth in many developed countries (see e.g. Sierminska and Takhtamanova, 2012) and the decision of investment in housing has relevant and manifold effects for the very same household. Examples are implications on consumption (e.g. Attanasio et al., 2009; Sierminska and Takhtamanova, 2012), consumer credit (e.g. Brown et al., 2013) education decision (e.g. Lovenheim and Reynolds, 2013), job mobility (e.g. Battu et al., 2008), pension / retirement wealth investments (e.g. Fahey, 2003; Dewilde and Raeymaeckers, 2008) and household financial fragility (e.g. Brunetti et al., 2012). Conversely many are the instances that influence the housing investing decision ranging from house prices (e.g. André, 2010, and Gattini and Ganoulis, 2012) to financial literacy (Calcagno and Urzì Brancati, 2013).

The existing literature that has so far addressed the housing investment decision has done it referring essentially to primary homes. Yet, there is a substantial difference between decisions over primary homes, which are mainly motivated by an essential consumption need, and those on second or further homes, which are in principle motivated by not essential consumption needs (e.g. holidays, heirs' consumption) and/or investment objectives. Additionally, the share of households holding second homes is in some countries definitely high, with more than 12% of Chinese household reporting multiple homeownership (Huang and Yi, 2010), around 13% in US (Choi et al., 2014) almost one fifth in Sweden (Dijst et al., 2005) and more than 22% for Italy (Sierminska and Doorley 2013), although in others is still limited, e.g. around 5% in the Netherlands (Dijst et al., 2005), 4% in Northern Ireland (Paris et al, 2009) and around 1% in both Great Britain and Germany (Dijst et al., 2005).

Against this backdrop, the objective of this paper is to detect possible real estate investment mistakes by investigating the use that the households effectively makes of their dwellings other than the primary residence, which in the rest of the paper we refer to as "second houses". To the best of our knowledge, this study represents the first attempt in this direction. Studies on multiple ownership are notably infrequent, and those existing focus on the determinants of second homes ownership only and do not investigate further the choice concerning the eventual use of the additional dwellings. In particular, we are interested in those cases in which the acquisition of an additional real estate eventually ends up with a non-profitable use of the same, as those might indeed represent a failed investment.

To this end we use a dataset of six biannual waves over the period 2002-2012 drawn from the Bank of Italy Survey on Household Income and Wealth (SHIW). The reason for using Italian data is twofold. First, the portfolio composition of Italian households, which is characterized by a high level of housing investment, is not limited to the primary residence. In fact, according to our sample, more than two out of three Italian households (68.8% over our full sample) own their primary home and one fifth of them are also second homeowners. Since our sample is representative of Italian population, this means that on average 15% of the Italian households do own a second house.[1] Second the SHIW, provides not only a complete picture of their socio-economic and financial conditions but also plenty of information about each household's real estate. As for the sample period, we chose it so as to encompass both a booming period as well as the recent financial crisis, which makes our analysis particularly interesting since, as Di (2009) puts it: "*Since housing is both consumption and an investment, and the two components have yin-and-yang dynamics throughout a market cycle, there should be caution in reaching policy-related conclusions only based on the relationship detected at one time alone in the market cycle"*.

Based on the information available in the dataset, we are able to classify the main use of "second houses" distinguishing between profitable, unprofitable, holiday and other uses. In such a way we are able to tell whether second homes turn out to fulfil a life dream of the household or rather result in a wrong investment decision. To this end we use a multinomial logit model and analyse the association between these main uses and three sets of controls: socio-economic characteristics of the household, portfolio controls and specific features of the real estate. Results highlight that at the household level, an unprofitable use of real estate tends to be more quite clearly associated with male decision makers, suggesting that men might afford this situation more than women, while theh opposite is true for single. We also find evidence that houses not actively bought by the household, i.e. inherited or built, are more likely to end up being unused, and this may provide a quite clear policy suggestion. By contrast, second houses legally owned by the couple or by the patronymic family are generally holiday houses rather than left unused. Interestingly, the lower the number of year the second house is in possession of the household, the higher the probability that it will be rented or used for work, a result which may be at least partly connected with obsolescence problem and maintenance costs. The location of the additional estate is also important: second houses abroad are actually for other personal use rather than being rented or left unused, while additional dwelling located in a different Italian region are most likely holiday houses at the expense of any other

[1]Sierminska and Doorley (2013) show that on average Italian households have a propensity to hold investment real estate (i.e. other from the primary housing) second only to Spanish households (higher than US, Canadian, German and very similar to Luxembourg). Additionally, Cannari and Faiella (2008) state that SHIW strongly underestimates the number of secondary dwellings. The actual relevance of second homes in Italy might therefore be even higher.

possible outcome. Finally, a high value per square meter is positively associated with holiday use, probably capturing "luxury" holiday houses (es. Sardinia or Tuscany), while, according to expectation, the higher the value per square meter of the second house, the lower the probability of leaving it unused.

The rest of the paper is organized as follows. Section 2 reviews the existing literature on second houses, while Section 3 illustrates the dataset and the methodology, providing some descriptive statistics. Section 4 reports the results of the empirical analyses and Section 5 discusses their robustness. Last Section concludes.

2. Literature

The housing investment decision that has been so far investigated in the framework of optimal portfolio allocation refers essentially to primary homes (e.g. Flavin and Yamashita, 2002, Cocco, 2004, Sinai and Souleles, 2005, and Chetty and Szeidl, 2012). Also, most of the empirical literature on the issue focuses on the homeownership decision concerning primary residences, it relates to the US case, and/or targets specific age groups such as retired people (Nakajima and Telyukova, 2013, and references therein). Hence, despite the growing share of households holding second homes, there are very few studies on this issue.

A seminal work in this direction is Coppock (1977), who noticed that second houses are typical in highly educated households, with middle income and owning at least one car. Based on that, he listed three socio-economic processes behind the increase in multiple homeownership: first, higher disposable income; second, greater leisure time because of reduced working hours; and, third, higher rates of car mobility.

More recently, Di et al (2001) motivated by a sharp increase in the number of second homes in US, especially in some regions, show that second homes ownership is strongly related to age (with the maximum at the middle-age), income and indebtedness of household. An interesting result is that family composition (i.e. having kids, being married etc) matters only for "recreational" homes, not for housing bought for investment purpose. Similarly, Carliner (2002) based on different US data sources (the decennial Census, AHS, HVS, as well as surveys of homebuyer preferences from NAHB and NAR) finds that second homeownership is strongly associated with age, as well as income and wealth of homeowners. He also reports that a large share of second homes is held for purposes other than vacations or recreation, which accounts for only about half of the extra units, and only a minority of them is actually rented. Belsky et al. (2006) also examine the determinants of

the ownership of multiple homes in US, using data from both the American Housing Survey (AHS) and the Survey of Consumer Finances (SCF) referring to the period 1994-2005. By means of a logit models they show that the likelihood of owning a second home increases with age, income and wealth (despite the latter have very small economic significance), while geographical location is not relevant. Yet, since their ultimate scope is the estimation of multiple-homeownership on the income elasticity of primary housing demand, their analysis excludes homes owned for purely investment purposes, the rationale being that if the intention is not to use them, there is little reason to expect ownership of such homes to affect the income elasticity of demand for primary residences.

Turning to countries different from US, Bieger et al. (2007), from a more sociological than economic point of view, investigate the use of second houses in Switzerland and focus on the reasons against the non-rent of vacant houses. They find that age and the life-cycle point at which owners purchase second homes affect their final use. Focusing on the Spanish case, Modenes Cabrerizo and Colas (2007) model the decision to own second homes as a function of socio-demographic characteristics of the owner, characteristics of the primary residence as well as geographical location of the second home. Based on a logistic regression they show that, among the former, age matters while migration status (from another region) does not. Additionally, they report a role for characteristics of the primary residence, including the highly densely populated areas, suggesting that "*second homes [might] compensate first and foremost for the urban environment, and not the quality of the primary dwelling itself*".[2] Yet, Modenes Cabrerizo and Colas (2007) do not have information on the use of these second houses and hence do not investigate the issue. Huang and Yi (2010) focus on the tenure choice of both primary and additional homes in China, arguing that owning second homes is part of a more complex "housing portfolio" including also the decision on the primary home. Based on a conceptual framework that features both socio-economic and institutional determinants and on the 2005 China General Social Survey data, they find that the demand for second homes is actually related to household characteristics, including age, marital and migration statuses and family structure, as well as institutional settings, such as the distinctive schooling system and the recent government subsidies. In a very recent contribution, Bloze and Skak (2014) use a very rich dataset on Danish household to investigate the decisions to own a second home, to let it and the decision on how many weeks per year to let it. They find that the decisions to own a second house and to let it are mainly affected by the characteristics of the household, especially age of the owner, while the decision on how many weeks let it is more related to the characteristics of the second home.

[2] They thus find evidence of the compensation hypothesis, which Dijst et al. (2005) previously find for Netherlands as well but, not for Germany.

To summarize, with the only exception of the latter study, the literature on second houses has so far mainly focussed on US and has essentially investigated the determinants of second homes demand rather than on their use. Hence no policy indication can be inferred as for the actual goodness of the decision from a household portfolio viewpoint.

3. Dataset and Methodology

Among possible reasons for the still limited number of studies focussing on the use of second homes might be that surveys rarely provide sufficiently detailed data to explore the issue. In fact, whenever present, questions tend to be about the ownership of additional dwellings, but they typically do not allow to distinguish dwellings according to their actual use. The Bank of Italy Survey of Household Income and Wealth (SHIW) is a rare exception.[3] The SHIW is a biennial rotating-panel survey which provides in each wave data for around 8,000 households, defined as "a group of cohabiting people who, regardless for their relationships, satisfy their needs by pooling all or part of their incomes". The survey provides a complete picture of the economic condition of the household as well as plenty demographic information on each household member and in particular of the household head who, in contrast with other household surveys where it is typically defined on the basis of different attributes (e.g., highest income, or male gender), in the Italian survey is identified with the person who is responsible for the financial and economic choices of the household. Accordingly, in this study the decision on how to use the additional dwellings is referred to the household head, even though the actual owner is someone else among the household members.[4]

In our empirical analysis we focus on the 2002-2012 period and disregard all those observations in which the additional real estate is an agricultural or non-agricultural land (5,665 obs) or a non-residential building, e.g. boxes, warehouses, labs etc (3,044 obs) or since their use might be mainly driven by their nature rather than being an actual choice. In other words, focus on those households owning one (or more) additional residential buildings, for a total of 5,817 households holding a total of 8,112additional dwellings.[5]

[3] Data are downloadable from http://www.bancaditalia.it/statistiche/indcamp/bilfait. More details on the SHIW are reported in the Appendix.

[4] In fact, in our final sample, more than 80% of the additional real estates are (at least in part) legally owned by the household head.

[5] We also drop observations in which the household declares to own second houses but not the primary home (1,652obs), corresponding to the 2.62% of the original sample. In their study on China, Huang and Yi (2010) notice that 5.1% of their sample is represented by households renting their primary dwelling and owning additional homes. As a robustness check, we also run our analyses including these observations, obtaining similar results, see Section 5.

For each additional real estate different form the primary residence, the SHIW also provides a lot of information including where it is located (same region of residence, other Italian region, abroad), year of acquisition and of construction, as well as how it has entered the possession of the households (whether bought, gift, inherited, part bought and part inherited, or built). Additionally, the household is asked to indicate the main use of each dwelling, choosing among the following mutually exclusive answers:

- personal use: holiday
- personal use: work
- other personal use
- rented to person (full or part of the year)
- rented to society (full or part of the year)
- unrented
- usufruct
- free use

In our view, the additional dwelling is used in a profitable way whenever it is rented or used for work, while letting it unrented, in usufruct or in free use represent a non-profitable use of the real estate. Hence, in what follows we classify the use of second houses into 4 unordered cases:

- **Profitable**: if rented to person or society (either for the full year or for just part of it) or used for work
- **Unprofitable**: if in usufruct, in free use or left unrented
- **Holiday**: if used for holiday
- **Other**: if used for other personal use

Thus the final decision on how to use the additional dwelling represents our dependent variable Y_i that can take m = 1, .., 4 unordered values: 1 if the estate is used for "Profitable", 2 if it is "Unprofitable", 3 if "Holiday" and 4 in the residual case. The empirical strategy relies therefore on the estimation of a multinomial logit model.[6]

[6] The multinomial logit model makes the so-called Independence of Irrelevant Alternatives (IIA) assumption, meaning that the odds do not depend on the other alternatives that are available. Performing both the Hausman and the Small-Hsiao tests, we always found evidence against the IIA hypothesis. This hypothesis can be relaxed, but this generally leads to conceptually and computationally more complicated models so that, as a result, "*the multinomial logit model is the most frequently used nominal regression model*"(Long and Freese, 2006, p. 223). Additionally, Kropko (2011) concludes that the IIA should not be a major concern for researchers in using multinomial logit, since it "*provides […] accurate point estimates […] even when the IIA assumption is severely violated*".

For each household *i* and for each category *m* of the outcome Y_i, the probabilistic model has the following specification:

$$\Pr(Y_i = m \mid X_i) = \frac{\exp(\beta'_{(m|b)} X_i)}{\sum_{j=1}^{J} \exp(\beta'_{(j|b)} X_i)} \qquad \text{for } m = 1, \ldots, J, \text{ with } J = 4, \text{ and } b = 3$$

The vector of explanatory variables X_i contains different kinds of variables:

- **Fixed** controls: year of interview and region of residence of the head of the household;
- **Demographic** controls: gender, age and age squared, marital status and level of education of the head of household, as well as number of household components;
- **Economic** controls: natural logarithm of household disposable income and household net wealth (the latter including real and financial assets net of financial liabilities),as well as dummies for the occupational status of the head of household being employee, self-employed, retired, unemployed;
- **Portfolio** controls: a dummy for holding risky financial assets, one having mortgages and one for having informal debts;
- **Real estate** controls: dummies for having inherited or built rather than bought the building, dummies for having multiple owners other from the head of the household, dummies for begin located in a different Italian region or abroad rather than in the same region, year of possession and year of construction, as well as its value per square meter.

Table 1 reports summary statistics for all the variables used in our sample[7]. Table A.1 in the Appendix defines all the relevant variables.

Table 1. Descriptive statistics, estimation sample: 2002-2012.

Variables	Mean	St. Dev.	Min	Max
Use				
Profitable	0.241	0.428	0	1
Unprofitable	0.324	0.468	0	1
Holiday	0.329	0.470	0	1
Other use	0.106	0.307	0	1
Demographic controls				
Male	0.705	0.456	0	1
Age	58.689	13.055	18	99
Married	0.758	0.428	0	1
Single	0.091	0.288	0	1
Divorced	0.047	0.211	0	1

[7]All monetary amounts are expressed in real terms using the 2012 Consumer Price Index provided by Istat.

Widow	0.104	0.305	0	1
No Education	0.011	0.103	0	1
Primary Education	0.165	0.371	0	1
Secondary Education	0.244	0.429	0	1
College	0.372	0.483	0	1
University	0.191	0.393	0	1
Post-University	0.018	0.133	0	1
Household size	2.721	1.147	1	8
Economic controls				
Income	60,479.250	48,080.940	4,059.34	1,205,703
Wealth	766,939.200	1,089,891.000	21,661.67	3.09E+07
Employee	0.290	0.454	0	1
Self-employed	0.216	0.412	0	1
Retired	0.428	0.495	0	1
Unemployed	0.014	0.117	0	1
Portfolio controls				
Has risky assets	0.318	0.466	0	1
Has mortgage	0.123	0.328	0	1
Has debt towards friends/family	0.014	0.116	0	1
Real estate controls				
Bought	0.452	0.498	0	1
Inherited	0.456	0.498	0	1
Built	0.093	0.290	0	1
Single Owner	0.774	0.418	0	1
Head	0.562	0.496	0	1
Partner	0.169	0.375	0	1
Child	0.020	0.139	0	1
Parent	0.009	0.093	0	1
Other	0.005	0.0691323	0	1
Head and Partner	0.200	0.400	0	1
Descendants	0.011	0.102	0	1
Ascendants	0.007	0.081	0	1
With Other	0.009	0.094	0	1
Same region	0.812	0.390	0	1
Different region	0.183	0.386	0	1
Abroad	0.005	0.070	0	1
Size (in squared meter)	97.060	71.890	5	1000
Value	167,937.100	188560.400	30	4000000
Value per square meter	1.841	1.367	0.000278	25
Year in possession	18.385	14.315	0	116
Actual rent (if rented)	4,862.331	4800.053	1	84000
Potential rent (if not rented)	3,835.599	4942.507	25	100000

Note: Statistics computed using sample weights. The final estimation sample counts 8,059 observations, except for actual rent, which is provided only in 2,210 cases of rented estates, and for potential rent, available for 5,823non rented estates.

Unprofitable uses, account for about one third of possible uses of "second houses", while only one quarter is used in a profitable way, i.e. for work or rented (either to a person or to a society and either for the full year or for just part of the year). A further third is used for holidays and the residual case represents the 11% of the sample. Figure 1 provides a graphical representation of these uses.[8]

The household head, referred to as the person in charge of the economic and financial decision of the household, and hence most likely the person taking the decision on the final use of the additional dwellings, is on average 59 years of age and a male in almost 70% of the cases. He is married in 76% of the cases, divorced in 5% of the cases and either single or widow with equal probability in the remaining cases. Finally, he owns on average a secondary education or college degree and lives in a household with 3 members on average.

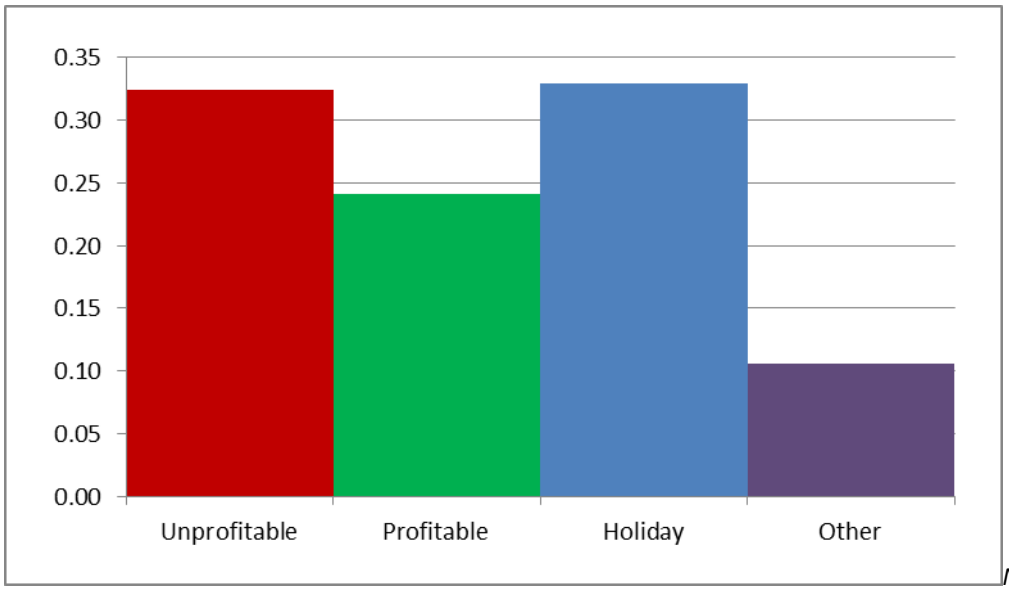
In our sample, 43% of the household heads are retired, around 30% are employee while the rest are self-employed. The average income and wealth are slightly more than 60 and 760 thousand euros respectively. Moreover, 32% of the owners of a second building in our sample do also hold risky financial assets, 12% have a mortgage and around 1% own money to relative or friends.

The average second house is almost 100 square meters and values around 170,000€, for an average value per square meter of 1800€. It has been either bought (45% of the cases) or inherited (45% of the cases), while a residual 10% has been specifically built by the household. The building is often legally owned by a single component of the household, who most likely is the head of the household or his/her partner, or by both of them. Almost 98% of the second houses in fact belong to one of these two. The additional building is basically located in the same region of residence of the household (81% of the cases) or in another Italian region, so that second house abroad are actually quite rare.[9] Finally, actual and potential rent are significant: the former, for those who rent, is around 5,000€ per year, while for those who do not rent, the potential rent is lower but still remarkable, around 4,000€ per year, confirming that leaving unrented a second house might represent an unprofitable use of the real activity.

[8] The share of unprofitable uses has been overall constant until 2006, then after a reduction in 2008, it has remarkably increased reaching more than 40% at the end of our sample period (see Appendix for the distribution of the uses over time).

[9] This is very much consistent with Choi et al (2014) who *inter alia* report that second homes are the ultimate local-biased investment.

Figure 1:



Note: Authors' elaborations on SHIW data.

4. Results

Table 2reports the marginal effects of each control over the probability that the real estate is in each of the four possible uses: Profitable, Unprofitable, Holiday or Other use, defined in Section 3.[10]

Table 2. Average Marginal Effects on the four possible real estate uses.

	Profitable	Unprofitable	Holiday	Other use
Demographic controls				
Male	0.002	0.041 **	-0.060 ***	0.017
Age	-0.004	-0.004	0.001	0.007 *
Age squared	0.002	0.002	0.003	-0.006 **
Single	0.073 **	-0.069 **	0.011	-0.016
Divorced	0.022	-0.027	0.032	-0.027
Widow	0.079 **	-0.045	-0.035	0.001
Edu 2	0.094	-0.075	0.049	-0.068
Edu 3	0.010	-0.086	0.125 **	-0.048
Edu 4	0.030	-0.130	0.171 ***	-0.072
Edu 5	0.073	-0.185 *	0.194 ***	-0.081
Edu 6	0.090	-0.248 **	0.223 ***	-0.064
Household size	-0.013	-0.010	0.011	0.012
Economic controls				

[10] The marginal effects are computed as the average of the marginal change of each household's probability of being of type *m*. For identification purposes, one category has to be taken as the base b. Here we chose to normalize the model with respect to category 3, thus estimating the parameters of the remaining three categories. The choice is arbitrary and does not affect the computation of marginal effects and predicted probabilities shown later

Ln(Income)	-0.027		0.016		0.028		-0.017	
Ln(Wealth)	0.090	***	-0.016		-0.052	***	-0.023	*
Employee	-0.052	*	0.110	***	-0.041		-0.018	
Self employed	-0.053		0.086	**	-0.034		0.001	
Retired	-0.028		0.062		-0.045		0.011	
Unemployed	-0.043		0.149	*	-0.066		-0.040	
Portfolio controls								
Has risky assets	-0.019		0.060	**	-0.049	**	0.007	
Has mortgage	-0.059		0.127	**	-0.038		-0.030	
Has debt with friends/family	-0.005		-0.024		0.006		0.023	*
Real estate controls								
Inherited	-0.010		0.133	***	-0.099	***	-0.024	*
Built	-0.074	***	0.130	***	-0.017		-0.039	**
Head and Partner	-0.004		-0.054	***	0.112	***	-0.055	***
Descendants	0.003		0.124	*	-0.146	***	0.020	
Ascendants	-0.011		-0.168	***	0.273	***	-0.094	***
With Other	-0.022		0.011		-0.098		0.108	
Different region	-0.230	***	-0.221	***	0.490	***	-0.040	***
Abroad	-0.175	**	-0.251	***	0.100		0.327	**
Years owned	0.002	***	0.000		-0.001	**	0.000	
Value per square meter	0.003		-0.035	***	0.026	***	0.005	

Notes: Marginal effects of multinomial logit estimates with clustered robust standard errors. Each regression includes time and regional dummies. significant at 10%; ** significant at 5%; *** significant at 1%.*

Concerning the demographic controls, male-headed households more rarely use their estate for holiday and more often do not even make a profitable use of the estate. While age does not seem to matter except for Other uses, marital status variables highlight that singles and widow/ers are more keen to a profitable use of second houses. Additionally, higher education seems to increase the likelihood of a use of for holiday and, at the highest two levels, to decrease the unprofitable use, but it does not show any association with any of the other outcomes. Finally, household size does not seem to matter in determining the final use of the second houses.

As for the economic controls, income does not seem to play a role, while households with higher wealth are less likely to use additional dwellings for holiday or for other personal use, while more often do rent them. Employees are less likely to use the second houses profitably, i.e. to rent or use them for work, while they are more likely to leave them unrented. The latter result, more unexpectedly is true for self-employed and unemployed.

As for the portfolio controls, having risky financial assets is positively associated with unprofitable use and negatively associated with holiday use, while formal debts are associated with a higher probability of an unprofitable use and informal ones increase other uses..

In sum, as for socio-economic characteristics of the head of the household, they are overall weakly associated with the final use of the household's second houses. Turning to the real estate characteristics the picture changes since they appear to be very important in shaping the household final decision on how to use the dwellings. Specifically, inherited houses are more prone to negative outcomes (e.g. unprofitable use) than to positive one (e.g. holiday). A very similar result holds for built estates. In other words, a real estate that has not been actually purchased by the household is more likely to end up being unused. On the other hand, second houses legally owned by both spouses are more likely to be associated with positive uses (holiday) and less likely to be unused. [11] By contrast owning a house with an ascendant or a descendant has opposite effects, whereby the former instance turn out to be associated to more profitable/useful outcomes. The location of the additional estate is also important: second houses abroad are actually for other personal use rather than being rented or left unused, while additional dwelling located in a different Italian region are most likely holiday houses at the expense of any other possible outcome. Interestingly, the lower the number of year the second house is in possession of the household, the higher the probability that it will be rented or used for work. Finally, high values per square meter are positively associated with holiday use, probably capturing "luxury" holiday houses (es. Sardinia or Tuscany), while, according to expectation, the higher the value per square meter of the second house, the lower the probability of leaving it unused.

5. Robustness

To check the robustness of the results, we investigate the following alternative specifications for the definition of second houses included into the dataset, for the reference person and the tenure choice of the primary home and for the control variables. Results for the unprofitable used of the additional dwellings, available upon request, are overall consistent with those reported in Section 3.

5.1 On the definition of second houses

The results presented so far are based on a dataset in which all those observations in which the additional estate is not residential are disregarded, since their use might be mainly driven by their nature rather than being an actual choice. However, even running the analyses on a dataset including boxes, specification (a), and boxes, warehouses and labs, specification (b), the results on

[11] This result can be connected with the literature on intra-household decision making over household financial-economic choices (see e.g. Bertocchi et al., 2014).

the unprofitable use are unchanged. The same holds when the analyses are carried out including those declaring to own just the non-residential house, as in specification (c).

5.2 On the reference person and the tenure choice of the primary home

A distinctive feature of the SHIW is the so called "declared" definition for the household-head, identified with the person who is "responsible for the financial and economic choices of the household". According to this definition, the socio-economic characteristics included into the model refer to the household head rather than to the legal owner of the second house. Yet, also in the latter case, the results remain unchanged.

Moreover, in their study on China, Huang and Yi (2010) report a 5.1% of their sample renting their primary dwelling and owning additional homes, which we also have and that we initially dropped from our dataset. As a robustness check, we also run our analyses including these observations, obtaining again similar results.

5.3 On the controls

As for the control variables, we try different specifications for age, entered in age-class dummies rather than in linear and quadratic terms, and income and net wealth, entered in quintile dummies as well as in linear and quadratic terms rather than in logs. Consistently with the results reported in Section 3, in all specifications the results are overall stable in terms of sign and statistical significance.

6. Conclusions

We investigate the use that the households effectively makes of their real estate other than the primary residence by using a very informative dataset drawn from the bank of Italy SHIW over a period that includes both a boom and a bust in the housing market (2002-2012). The estimates, carried out by means of a multinomial logit model, show that besides socio-economic characteristics of the household, such as gender and working position, what really shapes the final use of second houses are specific real estate features and the type of legal owning of the same.

More precisely, we find evidence that houses not actively bought by the household, i.e. inherited or built, are more likely to end up being unused, and this may be seen as a quite clear policy suggestion for countries where the propensity to buy a home for the "children" may well end

up in an investment mistake. By contrast, second houses legally owned by the couple or by the patronymic family are generally holiday houses rather than left unused. Interestingly, the lower the number of year the second house is in possession of the household, the higher the probability that it will be rented or used for work, a result which may be at least partly connected with obsolescence problem and maintenance costs. The location of the additional estate is also important: second houses abroad are actually for other personal use rather than being rented or left unused, while additional dwelling located in a different Italian region are most likely holiday houses at the expense of any other possible outcome. Finally, high values per square meter is positively associated with holiday use, probably capturing "luxury" holiday houses, while, according to expectation, the higher the value per square meter of the second house, the lower the probability of leaving it unused.

These results, even if suggestive of some policy indication, have to be seen as preliminary to a more in-depth analysis, which should consider the features of the primary home as well as dynamics of the housing market.

References

André C., 2010, A Bird Eye View of OECD Housing Markets, OECD Economics Department Working Papers, No. 746.

Attanasio, O. P., Blow, L., Hamilton, R., Leicester, A., 2009, Booms and Busts: Consumption, House Prices and Expectations, *Economica*, 76(301), 20–50.

Battu H., Ma A., Phimister E., 2008, "Housing Tenure, Job Mobility and Unemployment in the UK", *The Economic Journal*, 118 (527), 311–328.

Belsky, E.S., Xiaodi, Z. & McCue, D. 2006. "Multiple-homeownership and the income elasticity of housing demand", Working Paper of Joint Center for Housing Studies at Harvard University,W06-5

Beracha, E., Johnson, K., 2012, Lessons from Over 30 Years of Buy Versus Rent Decisions: Is the American Dream Always Wise? *Real Estate Economics*, 40 (2), 217-247.

Bertocchi G., Brunetti M. & Torricelli C. 2014. Who holds the purse strings within the household? The determinants of intra-family decision making, *Journal of Economic Behavior and Organization*, forthcoming.

Bieger, T., Beritelli, P. & Weinert, R. (2007). Understanding second home owners who do not rent—Insights on the proprietors of self-catered accommodation. *International Journal of Hospitality Management*, 26(2), 263-276.

Bloze, G., Skak, M., 2014, "Owning, letting and demanding second homes," Discussion Papers of Business and Economics 1/2014, Department of Business and Economics, University of Southern Denmark.

Brown M., Stein S., Zafar B., 2013, The Impact of Housing Markets on Consumer Debt: Credit Report Evidence from 1999 to 2012, Federal Reserve Bank of New York Staff Reports, no. 617.

Brunetti M., Giarda E., Torricelli C., 2012, Is Financial Fragility a Matter of Illiquidity? An Appraisal for Italian Households, Working Paper Cefin N.32.

Calcagno R., Urzì Brancati, C., 2013, Do more financially literate households invest less in housing? Evidence from Italy, CeRP WP N. 131/13, Carlo Alberto Notebooks no. 297

Cannari, L., Faiella I., 2008, House Prices and Housing Wealth in Italy, in *Household wealth in Italy*, Banca d'Italia, 2008

Carliner, M., 2002, Second Homes: A Growing Market?, Housing Economics, July, 7-12.

Chorafas D.N., 2013, *Household finance: a drift in a sea of red ink*, Palgrave Macmillan.

Cocco, J. F., 2004, Portfolio Choice the Presence of Housing, *The Review of Financial Studies* 18, 535-567.

Coppock, J.T., 1977, *Recreational Homes: Curse or Blessing?* edited by J.T. Coppock, 195-214 Oxford: Pergamon Press.

Chetty, R., Szeidl A., 2012, The Effect of Housing on Portfolio Choice, mimeo.

Choi H., Hong H., Kubik J., Thompson J.P., 2014, "When Real Estate is the Only Game in Town", NBER Working Paper No. 19798

Di, Z. X., McArdle, N., Masnick, G. S., 2001, "Second Homes: What, How Many, Where and Who" Working Paper N01-2. Joint Center for Housing Studies. Harvard University.

Di, Z. X., 2009, "Does second-home ownership affect primary housing demand?", *Housing Studies*, 24(3), 321-332.

Dijst, M, Lanzendorf, M, Barendregt, M., Smit L., 2005, "Recreational Homes in Germany and the Netherlands: Ownership and Travel Impact Explained.", Tijdschrift voor Economische en Sociale Geografie, 96 (2): 139- 152.

Dewilde, C., Raeymaeckers, P. (2008), "The trade-off between home-ownership and pensions: individual and institutional determinants of old-age poverty", *Ageing and Society*, 28 (06), 805-830

Fahey, T. (2003), "Is there a Trade-Off between Pensions and Home Ownership? An exploration of the Irish case", *Journal of European Social Policy*, 13 (2), 159-173

Flavin, M., and T. Yamashita, 2002, Owner-Occupied Housing and the Composition of the Household Portfolio over the Life Cycle, *American Economic Review*, 92, 345–362.

Gattini, L., Ganoulis, I., 2012, House Price Responsiveness of Housing Investments across Major European Economies, Working Paper N.1461, European Central Bank.

Huang, Y. Yi, C., 2010, Consumption and Tenure Choice of Multiple Homes in Transitional Urban China, International Journal of Housing Policy, 10 (2), 105-131.

Kropko J., 2010. "A Comparison of Three Discrete Choice Estimators", Working Paper, University of North Carolina, Chapel Hill.

Kropko, J., 2011, "New Approaches to Discrete Choice and Time-Series
Cross-Section Methodology for Political Research". University of North Carolina, Chapel Hill. Available at https://cdr.lib.unc.edu/record/uuid:aa4f16fe-c6b6-4b36-8e48-eb11742c30c7

Long J. S., 2012. "Regression Models for Nominal and Ordinal Outcomes", Working Paper, Indiana University.

Long, J. S. and J. Freese, 2006. *Models for Categorical Dependent Variables Using Stata*, Second Edition, Stata Press, Texas, USA.

Lovenheim M., Reynolds C.L., 2013,The Effect of Housing Wealth on College Choice: Evidence from the Housing Boom", *Journal of Human Resources*, 14 (1), 3-37. Modenes Cabrerizo, J. A., & Lopez Colas, J. (2007). Second homes in Spain: Socio-demographic and geographical profiles. *Population*, 62(1), 157-171.

Nakajima M., Telyukova I.A., 2013, Housing in Retirement Across Countries, Center for Retirement Research at Boston College.

Paris C., Jorgensen B., Martin J., 2009, The Ownership of Many Homes in Northern Ireland& Australia: Issues for States and Localities, *Australasian Journal of Regional Studies*, 15 (1), 65-80.

Sierminska E., Takhtamanova Y., 2012, Financial and Housing Wealth and Consumption Spending: Cross-Country and Age Group Comparisons, *Housing Studies*, 27(5), 685-719.

Sinai, T., Souleles, N. S., 2005, "Owner-Occupied Housing as a Hedge Against Rent Risk", *The Quarterly Journal of Economics*, 120 (2): 763-789.

APPENDIX

Table A.1 –SHIW variables description

Variable	Description
Dependent variable	
Second house use	Categorical variable assuming 4 values: 1 = profitable uses, namely rented to person or society or used for work 2 = unprofitable uses, namely usufruct, free use or left unrented 3 = holiday use 4 = other personal use
Control variables	
Male	Binary variable assuming value 1 for male, 0 for female.
Age, Age^2	Integer variables representing the age of household head (values between 18 and 99) and its squared term.
Married, Single, Divorced, Widow	Binary variable assuming value 1 for the corresponding marital status, 0 otherwise.
Education	Categorical variable representing the highest education level achieved: 1 = no education 2 = primary school 3 = secondary school 4 = college 5= graduate level 6 = post-graduate level
Household size	Number of household components ranging between 1 and 8.
Ln(Income)	Continuous variable representing the natural logarithm of household total yearly disposable income (including potential children maintenance provided by ex-partners) at 2010 value expressed in €.
Ln(Wealth)	Continuous variable representing household wealth at 2010 value expressed in €.
Employee, Self-employed, Retired, Unemployed	Binary variable assuming value 1 for household heads being in the corresponding occupational status, 0 otherwise.
Has risky assets	Binary variable assuming value 1 for household holding risky financial assets (corporate bonds, stocks and shares and foreign assets), 0 otherwise.
Has mortgage, Having debt towards family	Binary variable assuming value 1 for household having a mortgage or debt vs. relatives/friends, 0 otherwise.
Bought	Binary variable assuming value 1 for second houses having been bought by the household, 0 otherwise.
Inherited	Binary variable assuming value 1 for second houses having been inherited by the household, 0 otherwise.

Built	Binary variable assuming value 1 for second houses having been built by the household, 0 otherwise.
Single Owner	Binary variable assuming value 1 for second houses legally owned just by one member of the household, 0 otherwise.
Head	Binary variable assuming value 1 for second houses legally fully owned by the head of the household, 0 otherwise.
Partner	Binary variable assuming value 1 for second houses legally fully owned by the partner of the head of the household, 0 otherwise.
Child	Binary variable assuming value 1 for second houses legally fully owned by the child(ren) of the head of household, 0 otherwise.
Parent	Binary variable assuming value 1 for second houses legally fully owned by the parent(s) of the head of household, 0 otherwise.
Other	Binary variable assuming value 1 for second houses legally fully owned by relative(s) other than the partner, child(ren) and parent(s) of the head of household, 0 otherwise.
Head and Partner	Binary variable assuming value 1 for second houses legally owned by both the head of the household and his/her partner, 0 otherwise.
Descendants	Binary variable assuming value 1 for second houses legally owned by the head of the household and his/her children, 0 otherwise.
Ascendants	Binary variable assuming value 1 for second houses legally owned by the head of the household and his/her parents, 0 otherwise.
With Other	Binary variable assuming value 1 for second houses legally owned by the head of the household and his/her relatives other than children and parents, 0 otherwise.
Same region	Binary variable assuming value 1 for second houses being located in the same region of residence of the household, 0 otherwise.
Different region	Binary variable assuming value 1 for second houses being located in an Italian region other than the one of residence of the household, 0 otherwise
Abroad	Binary variable assuming value 1 for second houses being located abroad, 0 otherwise
Value per square meter	Continuous variable representing the value per square meter of the second houses in thousand €, computed as the ratio between the declared value of the dwelling and its size in squared meters.
Year in possession	Integer variable representing the number of years the household has been owning the second house, ranging between 0 (house obtained in the same year of the interview) and 116.
Actual rent (for rented estates)	Continuous variable representing the yearly rent obtained by rented second houses, at 2010 thousand €.
Potential rent (for not rented estates)	Continuous variable representing the yearly rent which might be potentially obtained if the second house were rented, at 2010 thousand €.

Table A.2 –Distribution of the uses, over the full sample and by wave

Use by year	Full sample	2002	2004	2006	2008	2010	2012
Profitable	24.03	25.96	25.96	22.5	26.49	22.26	21.88
Unprofitable	32.46	30.86	26.38	29.97	27.21	36.53	40.7
Holiday	32.95	30.37	32.25	36.02	36.82	31.71	30.87
Other	10.56	12.82	15.42	11.51	9.49	9.5	6.55
Total	100	100	100	100	100	100	100

Note: Statistics computed using sample weights.