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

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Abstract

While the purchase of a primary home is mainly motivated by essential consumption needs, buying a second house has been generally considered a good investment decision. However, second homes may result in many different final uses, ranging from holidays and profitable uses to definitely unprofitable ones. We contribute to the scant literature on second houses by exploring the case of second homes that remain unrented and represent the most notable unprofitable use. The empirical investigation relies on the 2002-2012 Bank of Italy Survey on Household Income and Wealth which, among other things, provides plenty of information on real estates, including the actual use. Our results on the unprofitable use of second homes highlight: a gender gap, whereby this case tends to be more clearly associated with male decision makers; no association with household's economic characteristics; and, strong association with the specific real estate features, with inherited dwellings more likely to end up being unprofitably used. Thus our results, besides casting some doubts on the goodness of second homes as an investment decision, may have important policy implications on the housing and rental market and call for policy or regulatory interventions.

Keywords: multiple homeownership, second homes, household portfolios, probit

JEL Codes: C25, D1, D14, R2

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1. Introduction

Real estate represents most of the household wealth in many developed countries (see e.g. Sierminska and Takhtamanova, 2012) and the investment in housing has relevant and manifold effects on many other decisions of the 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., 2015). 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 Urzi Brancati, 2014).

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 in some countries is definitely high, although in others is still limited. For instance, Dijst et al. (2005) report more than one fifth of Swedish households holding second homes, as opposed to below 5% in the Netherlands, and below 1% in both Great Britain and Germany. The available figures on second homes ownership are highly disparate in the existing literature also because of the different definition of second homes used. As an example, Sierminska and Doorley (2013) find that more than 36% of Spanish households and more of 22% of Italian ones do own additional residential and corporate real estate besides the principal residence. On the other hand, Choi et al. (2014) focus on investment homes only, namely second homes specifically bought to generate rental income and distinct from vacation homes, reporting that more than 13% of US households do hold such types of second homes. Further, Paris et al. (2009) do report a quite low rate of multiple ownership rate for both Australia and Northern Ireland (between 3 and 4% in both countries), yet focusing on holiday homes and dwellings related to individual and household mobility or other non-commercial purposes only. Finally, Huang and Yi (2010) stress the rising share of households reporting multiple homeownership in China, which was equal to 12% in 2005, including under the definition of second homes also rented ones.

Against this backdrop, this paper aims to answer a difficult question: do second houses represent the fulfilment of a life's dream (e.g. for holidays, for grown up children) or rather do they end up being unused and as such a wrong investment? To this end, we investigate 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” or “second homes”. To the best of our knowledge, this study represents the first attempt in this direction. Studies on multiple ownerships 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 SHIW provides a complete picture of their socio-economic and financial conditions coupled with a unique set of information about each household’s real estate, based on which we are able to classify the main use of “second houses”. More specifically, we can distinguish between profitable, unprofitable, holiday and other uses, and hence tell whether second homes turn out to fulfil a life dream of the household or rather result in a failed investment decision (as Campbell, 2006 puts it: “*investment mistakes are central to the field of household finance*”). Second, 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. This provides sufficient variation for the estimates. Notably, since our sample is representative of Italian population, this means that 15% of the Italian households do own a second house¹, entailing a relevant economic importance of the issue at hand. Additionally, the sample period covered encompasses both a booming period as well as the recent financial crisis, which makes our analysis particularly interesting, also in the light of what reported by Di (2009): “*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 probit specification for the second home being unprofitably used, we analyse the association between this outcome and three sets of controls: demographic and economic characteristics of the household, portfolio controls and specific features of the real estate. This

¹Sierminska 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 than what reported in the present study.

allows us to test whether the decision on how to handle additional real estate is shaped by the demographic and economic characteristics of the household rather than associated with the second-home features, and whether it is framed into portfolio decisions.

Our results highlight that the actual use of second homes is not connected with other financial decisions of the household, and that what really shapes the final use of second houses are specific real estate features more than the economic characteristics of the household. Besides a gender gap, highlighting that the unprofitable use of real estate tends to be more often associated with male decision makers, no other demographic or economic control turns out to be relevant. By contrast real estate controls are strongly associated with the outcome of interest. As expected, the higher the value per square meter of the second house, the lower the probability of leaving it unrented. The location of the additional estate is also important: second houses abroad or located in a different Italian region are less likely to be unrented. More interestingly, inherited houses or second houses legally owned by the head of the households with his/her descendants are more likely to end up being unused, and this may provide a quite clear policy suggestion. Additionally, the higher the number of years the second house is in possession of the household, the lower the probability that it will be unprofitably used, thus indicating a positive association between profitable uses and familiarity with the property.

Given the possible implication of our results in normative terms for household portfolio decisions, we believe they are of interests for financial advisors and policy makers. In fact, unused second homes imply a limited supply on the housing market and rental market and this may call for policy or regulatory interventions.

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 homeownerships: 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 account 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 model 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.

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 of 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 the possible reasons for the still limited number of studies focussing on the use of second homes availability of data is certainly one, since surveys rarely provide sufficiently detailed information 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

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

³ More details on the SHIW can be found at <http://www.bancaditalia.it/statistiche/indcamp/bilfait>.

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 (5,197 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, the analysis focuses on households owning one or more additional residential buildings, for a total of 3,568 households holding a total of 8,013 additional dwellings.⁵

For each additional second home, 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, 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 or to society (full or part of the year)
- unrented
- usufruct
- free use

In this study, we take a quite restrictive definition of unprofitable use and only dwellings left unrented are referred to as “unprofitable”. In such cases in fact the owner does not extract any direct rent from the second home, while still facing the fixed costs of homeownership, including minimum

⁴ In the final sample more than 80% of the additional real estates are (at least in part) legally owned by the household head. Hence, also referring the demographic characteristics to the legal owner of the second home rather than to the head of the household leaves the empirical evidence obtained largely unchanged.

⁵ We also drop observations in which the household declares a negative consumption (7 observations) or in which the household head is less than 18 years old or older than 90 (358 observations). Additionally, we drop observations in which the household declares to own second houses but not the primary home (1,652 observations), 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.

utilities and property taxes, which in some cases might be substantial⁶, as well as liquidation costs should he/she be forced to sell it at unfavorable prices.

Thus, the decision of household i on how to use each additional dwelling j is modelled according to the following probit⁷ specification:

$$P(Y_{ij} = 1) = \Phi(X_i\beta + F_i\gamma + R_{ij}\delta)$$

where, as usual, Φ represents the cumulative distribution function of a Normal distribution. The binary dependent variable, Y_{ij} , takes value 1 when household i uses second home j “Unprofitably”, namely when it is in usufruct, in free use or unrented, and 0 otherwise, i.e. when rented to person or society (either for the full year or for just part of it), used for work, for holiday or for other personal use. This decision is thus modelled as a function of the following sets of controls:

- Vector X_i contains the standard **demographic and economic controls**, traditionally associated to household’s portfolio decisions, namely: gender, age and age squared, marital status, level of education and the occupational status of the head of household, as well as number of household components, household’s disposable income and net wealth (in natural logarithm), besides dummies for time and region-of-residence fixed effects;
- Vector F_i contains the controls capturing the households’ **financial decisions**, namely: a dummy for holding risky financial assets, one having mortgages and one for having informal debts;
- Finally, vector R_{ij} gathers all the information specific to each **real estate**, namely: value per square meter, years in possession, (actual or potential) rent, dummies for being located in a different Italian region or abroad rather than in the same region, a dummy for having been inherited (rather than bought or built), and dummies for having multiple owners other from the head of the household.

This specification allows to empirically test the following hypotheses on the final use of second homes:

⁶ E.g. for the US, an estimate of the average cost of a second home is found to be around 700\$ per month, not including mortgage, repairs or improvements (<http://realestatescorecard.com/library/story/cost-living/cost-owning-second-or-vacation-home>, <http://www.wsj.com/articles/SB10001424127887323463704578495193247679474>).

⁷ Very similar evidence is found when the empirical strategy relies on a multinomial logit model where the final use of the second home is modelled as a categorical variable taking 4 unordered values, namely Holiday, Profitable (when rented or used for work), Unprofitable (consistently with our definition, when in usufruct, in free use or unrented) and Other. However, both the Hausman and the Small-Hsiao tests provide evidence in favor of the Independence of Irrelevant Alternatives (IIA) assumption, required by the multinomial model, only for 3 cases out of 4. Despite Kropko (2011) concludes that the IIA should not be a major concern when using multinomial logit, since it “*provides [...] accurate point estimates [...] even when the IIA assumption is severely violated*”, we here prefer the probit specification and use the multinomial model as a robustness check.

1. It is shaped by demographic and economic characteristics of the household. Statistically, this translates into the coefficients in vector β , capturing the association of variables traditionally linked to household's portfolio decisions, being significantly different from zero.
2. It is framed into portfolio decisions, i.e. it correlates to other financial choices of the household. If this occurs, the coefficients in γ should be statistically different from zero.
3. It is associated with the second-home features as well, meaning that also the coefficients in vector δ should retain their statistical significance.

Summary statistics on the estimation sample⁸ of all relevant variables are reported in Table 1, while detailed definitions can be found in Table A.1 in the Appendix.

Over the estimation sample, unprofitable uses account for more than 16.3% of second houses and looking at the time breakdown graphed in Figure 1, it is apparent that the share of unprofitably used second houses has remarkably increased, especially in the last part of the sample period, reaching almost 21% in the 2012 wave.

The household head, referred to as the person in charge of the economic and financial decisions of the household, and hence most likely the person taking the decision on the final use of the additional dwellings, is on average 58.6 years old. He is a male in almost 70.5% of the cases and married in 76.1% of the cases, most likely holding a college degree.

In our sample, 42.7% of the household heads are retired, 29.1% are employee while almost all the rest are self-employed. The average income and wealth are slightly more than 60 and 765 thousand euros respectively. Moreover, 31.8% of the owners of a second houses in our sample do also hold risky financial assets, 12.3% have a mortgage and 1.4% own money to relative or friends.

The average second house is 96.7 square meters, is worth around 170,000€ and it has been inherited in as much as 45.6% of the cases. 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 the household head and the partner, as 97.4% of the second houses fall in one of these two categories.⁹ The additional building is usually located in the same region of residence of the household (81.2% of the cases) or in another Italian region, and second houses abroad are actually quite rare.¹⁰ Finally, actual and potential rent are significant: the former, for those who rent, is slightly less than 5,000€ per year, while for those who do not rent, the reported potential rent is

⁸All monetary amounts are expressed in real terms using the 2012 Consumer Price Index provided by Istat.

⁹In the remaining cases, the share of property of the households is generally 50-50.

¹⁰This is very much in line with Choi et al (2014) who *inter alia* report that second homes are the ultimate local-biased investment.

lower but still remarkable, around 4,000€per year, confirming the potential gross return stemming from renting a second house.

Table 1. Descriptive statistics on the estimation sample.

Variables	Mean	St. Dev.	Min	Max
Dependent variable				
Unprofitable	0.163	0.369	0	1
Demographic and economic controls				
Male	0.705	0.456	0	1
Age	58.579	12.897	22	90
Married	0.761	0.427	0	1
Single	0.090	0.287	0	1
Divorced	0.047	0.212	0	1
Widow	0.102	0.303	0	1
Household size	2.725	1.148	1	8
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	0.371	0.483	0	1
University	0.191	0.393	0	1
Post-University	0.018	0.133	0	1
Income	60,421	47,932	-9919.09	1,205,703
Wealth	765,099	1,092,312	-875424	3.09E+07
Employee	0.291	0.454	0	1
Self-employed	0.217	0.412	0	1
Retired	0.427	0.495	0	1
Unemployed	0.066	0.248	0	1
Portfolio controls				
Has risky assets	0.318	0.466	0	1
Has mortgage	0.123	0.329	0	1
Has debt towards friends/family	0.014	0.117	0	1
Real estate controls				
Single Owner	0.773	0.419	0	1
Owners: Head & Partner	0.201	0.401	0	1
Owners: Head & Descendants	0.011	0.102	0	1
Owners: Head & Ascendants	0.007	0.081	0	1
Owners: Head & Others	0.008	0.090	0	1
Inherited	0.456	0.498	0	1
Same region	0.812	0.391	0	1
Different region	0.183	0.387	0	1
Abroad	0.005	0.071	0	1
Size (in squared meter)	96.725	71.515	5	1,000
Value	167,354	187,675	30	4,000,000
Year in possession	18.282	14.245	0	116
Actual rent (if rented)	4,863.494	4,801.298	1	84,000
Potential rent (if not rented)	3,835.764	4,936.312	25	100,000

Note: Statistics computed using sample weights. The estimation sample counts 8,013 observations, except for actual rent, which is provided only in 2,203 cases of rented estates, and for potential rent, available for 5,810 non rented estates.

Figure 1: Second homes uses: time breakdown



Notes: Authors' elaborations on SHIW data.

4. Results

Table 2 reports the average marginal effects of each control over the probability that the real estate is unprofitably used, as defined in Section 3, i.e. unrented. The specifications in Columns 1 to 3 include each group of controls separately besides time and regional fixed effects, while Column 4 reports our preferred specification, including all sets of controls.

The first column shows a gender gap, with male-headed households being 4 percentage points more likely to make an unprofitable use of the second homes. Similarly, each additional member of the household increases the likelihood of owning an unrented second home by 2.4 percentage points on average. Besides gender and household size, however, there seems to be no role for any other control, not even the overall economic condition of the household, as captured by the income and wealth and by the working position of the head of the household. These results are remarkably robust to the inclusion of additional controls: our preferred specification – reported in Column 4 – shows the limited importance of demographic and economic characteristics in shaping the household final decision on how to use the dwellings is even more apparent, as only the gender gap survives.

In sum, our first hypothesis is only partially supported by the data. Among the usual demographic controls only gender turns out to be relevant, with male-headed households more likely to leave second homes unrented. On the other hand, no role for the overall economic condition of the household is found.

Table 2. Average Marginal Effects on the probability of unprofitable use of second homes.

	Demographic and Economic	Portfolio	Real Estate	Full specification
Demographic and economic controls				
Male	0.040**			0.039**
Age	0.003			0.001
Age squared	-0.003			-0.001
Married	-0.028			-0.005
Household size	0.024***			0.011
Edu 2	0.020			0.023
Edu 3	0.011			-0.006
Edu 4	-0.017			-0.023
Edu 5	-0.062			-0.053
Edu 6	-0.102			-0.093
Ln(Income)	-0.011			0.012
Ln(Wealth)	-0.010			0.003
Employee	0.022			0.007
Self employed	0.008			0.002
Retired	0.006			-0.001
Portfolio controls				
Has risky assets		-0.011		-0.002
Has mortgage		0.011		0.003
Has debt with friends/family		0.075		0.081
Real estate controls				
Value per squared meter (Actual or potential) rent			-0.035***	-0.032***
Different region			-0.007***	-0.007***
Abroad			-0.111***	-0.106***
Years in possession			-0.135***	-0.133***
Inherited			-0.002***	-0.001**
Head and Partner			0.077***	0.071***
Head and Descendants			-0.013	-0.027
Head and Ascendants			0.165**	0.178**
Head and Others			-0.041	-0.045
Pseudo R2	0.060	0.040	0.110	0.116
Obs.	8,013	8,013	8,013	8,013

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

Turning to portfolio controls, in both Columns 2 and 4 the presence of risky assets in the financial portfolios of households is associated with a lower probability of owning an unprofitably used second home, although this effect is not precisely estimated. Similarly, both formal and informal debts are on average associated with a higher probability of an unprofitable use, but again the coefficients are not statistically significant. This might be in fact the result of a non-efficient immobilization of the households' wealth. Thus, our second hypothesis is not supported by the data. The decision on how to use the second home does not correlate with the other financial decisions of the household.

By contrast, most of the controls specific to each real estate turn out to be strongly associated with their final use. The estimates in Column 3 show expectedly that the higher the value per square meters and the higher the actual or potential rent of the second house, the lower the probability of leaving it unused. The location of the additional estate is also important: second houses in a different region or abroad are less likely to be left unused, most likely capturing the effect of holiday houses. Interestingly, the higher the number of years the second house is in possession of the household, the lower the probability that it will be unprofitably used, a finding that points to a positive relationship between profitable uses and households' familiarity with their property also in terms of the costs of leaving it unrented. Finally, inherited houses are 8% more likely to end up with an unprofitable use.¹¹ This result is consistent with the evidence found for second houses owned by the head of the household with descendants, which will most likely end up being the recipients of the estate bequest. In such cases in fact the second home has on average a (striking) 17-percentage points higher probability of ending up empty and unused.

To sum up, the final use of the household's second houses seems to be more driven by the real estate characteristics rather than by the demographic and economic characteristics of the household and/or by its financial portfolio choices.

5. Robustness

This section presents the results obtained under alternative specifications of the dependent variable and of some controls. Additionally, the robustness of the results is tested with respect to: a subsample of observations, to a wider definition of second houses, and to the tenure choice of the primary home. Overall, results on the important of real estate characteristics are very robust.

¹¹ We also try a model specification including the interaction term between the inherited dummy and gender, the only significant control among the demographic and economic ones. Yet, no statistical significance was found, ruling out the presence of a further gender difference in handling inherited second homes.

5.1 On the definition of unprofitable use

In the main specification, the additional dwelling is unprofitably used when it is left unrented. In Table 3, Column (1), we test a more comprehensive definition, attaching the unprofitable use not only to unrented dwellings but also to those in usufruct and in free use. Also in those cases in fact the fixed costs of homeownership and the costs implied by a possibly untimely liquidation are not counterbalanced by any form of rent extraction. The estimated effects reported in Table 3, Column (1) are qualitatively similar to those reported in Section 4, confirming the limited importance of demographic and economic characteristics in favor of the real estate characteristics in shaping the household final decision on the use of the second home. The wider definition used only adds to the picture an expected role for education, as the chances of unprofitable uses strongly decrease at the higher end of the gradient¹², and for “married” decision makers and “employee”, who are more likely to leave the second house unprofitably used if usufruct and free use are also considered. Both formal and informal debts are associated with a higher probability of an unprofitable use, a result that points to a non-efficient immobilization of the households’ wealth.

5.2 On the controls

Column (2) and (3) in Table 3 report alternative specifications for age and for income and wealth, respectively. More specifically, entering age-classes rather than age in linear and quadratic terms or income and wealth in quartiles rather than in logs lead to the same results reported in the main specification.

5.3 On the dataset

The results presented so far are based on a dataset in which all those observations in which non-residential additional estates 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, warehouses and labs the results on the unprofitable use are largely unchanged, as shown in Table 3, Column (4). An expected difference in this case is the significant and negative correlation with the employment status “self-employed”.

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 run our analyses including these observations (see Column (5) in Table 3), obtaining again similar results.

¹² Findings on education are overall in line with the seminal work by Coppock (1977), who suggests a positive connection with multiple homeownerships, disposable income and greater leisure time.

Finally, we re-run our analyses dropping from the original sample those observations in which the household declares the second home to be for “other personal use”. In fact, when this alternative is chosen the household does not provide any additional information, so that this category might actually incorporate disparate uses in terms of profitability. Again, the results for the variables of interest in the unprofitable case - reported in Table 3, Column (6) - are similar to those reported in Section 4.

Table 3. Marginal Effects on the probability of Unprofitable use: robustness checks.

	(1)	(2)	(3)	(4)	(5)	(6)
	Less restrictive definition of unprofitable use	Age classes	Income and wealth quartiles	Including boxes, warehouses and labs	Including no-primary home owners	Dropping “Other personal use”
Socio-economic controls						
Male	0.042*	0.040**	0.032*	0.030**	0.050***	0.057***
Age	-0.003		0.000	0.003	0.003	0.001
Age squared	0.001		-0.001	-0.002	-0.003	-0.002
31-40		0.016				
41-50		0.026				
51-60		0.032				
61-70		0.002				
>70		-0.001				
Married	0.050*	-0.004	-0.001	-0.012	-0.019	0.010
Edu 2	-0.081	0.023	0.022	-0.002	0.016	-0.054
Edu 3	-0.112	-0.007	-0.004	-0.023	-0.014	-0.078
Edu 4	-0.155	-0.023	-0.023	-0.019	-0.038	-0.120
Edu 5	-0.215**	-0.053	-0.050	-0.038	-0.061	-0.172*
Edu 6	-0.275**	-0.096	-0.090	-0.082	-0.109*	-0.224**
Household size	-0.010	0.009	0.010	0.007	0.017**	0.011
Ln(Income)	-0.003	0.013		0.024**	0.003	0.010
Ln(Wealth)	-0.010	0.003		-0.001	0.001	-0.005
Income quartile = 2			0.005			
Income quartile = 3			0.008			
Income quartile = 4			0.034			
Wealth quartile = 2			-0.066			
Wealth quartile = 3			-0.027			
Wealth quartile = 4			-0.056			
Employee	0.072**	0.004	0.050	-0.002	-0.001	0.042
Self employed	0.040	0.002	0.052	-0.048**	-0.021	0.029
Retired	0.024	0.005	0.043	-0.018	-0.022	0.026
Portfolio controls						
Has risky assets	-0.025	0.004	0.001	-0.004	0.000	0.001
Has mortgage	0.064**	0.085	0.082	-0.001	0.002	0.032
Has debt with friends/family	0.128*	-0.002	-0.000	0.086*	0.047	0.132*
Real estate controls						

Inherited	0.105***	0.071***	0.072***	0.094***	0.065***	0.106***
Years in possession	-0.001	-0.001**	-0.001**	-0.001***	-0.002***	-0.002**
Head and Partner	-0.062***	-0.028*	-0.026	-0.020	-0.026*	-0.053***
Head and Descendants	0.087	0.180**	0.184**	0.060	0.186***	0.181**
Head and Ascendants	-0.178***	-0.040	-0.043	-0.028	-0.025	-0.098*
Head and Others	-0.020	0.047	0.075	0.034	0.020	0.128
Different region	-0.227***	-0.106***	-0.106***	-0.070***	-0.091***	-0.171***
Abroad	-0.238***	-0.135***	-0.135***	-0.087***	-0.089***	-0.164***
Value per squared meter	-0.033***	-0.032***	-0.030***	-0.016***	-0.030***	-0.038***
(Actual or potential) rent	-0.005***	-0.007***	-0.007***	-0.005***	-0.007***	-0.011***
Pseudo R2	0.128	0.111	0.116	0.094	0.112	0.116
Observations	8,013	8,013	8,013	11,016	9,148	5,975

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

6. Conclusions

This paper aims to answer a difficult question: do second houses represent the fulfilment of a life's dream (e.g. for holidays, for grown up children) or rather do they end up being misused and as such a wrong investment? To this end, we investigate the use that the households effectively makes of their real estate other than the primary residence by using a rich 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). To the best of our knowledge, this study represents the first attempt in this direction.

More specifically, we aim at testing whether an unprofitable use of second homes: (i) is shaped by traditional the demographic and economic characteristics of the household; (ii) is framed into portfolio decisions; (iii) is associated with the second-home features as well.

The empirical estimates, carried out by means of a probit model, provide partial support to the first hypothesis, since the usual economic markers of household financial decisions are not associated to the outcome of interest, but male-headed households are more likely to leave second homes unrented. While there is no support at all for the second hypothesis, since portfolio controls are not significant, there is strong supportive evidence for the latter hypothesis.

We thus conclude that the actual use of second homes is not framed into household's other financial decisions, and that what really shapes the final use of second houses are specific real estate features and the type of legal owning of the same, more than demographic and economic characteristics of the household. The latter in fact are not at all associated with the unprofitable use of the second home, while among the demographic controls only the gender of the head of the household is relevant, suggesting that men might afford this situation more than women. However, when the definition of unprofitable use includes also the case of usufruct and free use, education

plays a role in decreasing the probability of such a use, while the existence of formal and informal debt increases it, suggesting a non-efficient immobilization of the households' wealth.

Turning to the real estate characteristics, we find that – expectedly - the higher the value per square meter of the second house, the lower the probability of leaving it unused. The location of the additional estate is also found to be relevant: second houses abroad or located in a different Italian region are less likely to be left unused. More interestingly, inherited houses are on average as much as 8 percentage points more likely to end up being unused. Consistently with this result, we also find that when the second house is legally owned by the household-head with his/her descendants (a situation which most likely will lead to a real-estate bequest), the probability of ending up empty and unused rises by as much as 17-percentage points. 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. Interestingly, the higher the number of years the second house is in possession of the household, the lower the probability that it will be left empty, a finding that points to a positive relationship between profitable uses and households' familiarity with their property.

Given the possible implication of our results in normative terms for household portfolio decisions, we believe they are of interests for financial advisors and policy makers. In fact, unused second homes imply a limited supply on the housing market and rental market and this may call for policy or regulatory interventions.

In this study, the decision on the actual use of second home is not modelled jointly with the decision to own a second home in the first place. This, along with the investigation on such decisions of the potential impact of policy changes, as e.g. in Jappelli et al. (2014), are left for further research.

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APPENDIX

Table A.1 –SHIW variables description

Variable	Description
<i>Dependent variable</i>	
Unprofitable use of second home	Binary variable assuming value 1 when the second home is left unrented, 0 otherwise.
<i>Control variables</i>	
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 90) 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.
Inherited	Binary variable assuming value 1 for second houses having been inherited 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 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 €

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