BANCA D'ITALIA
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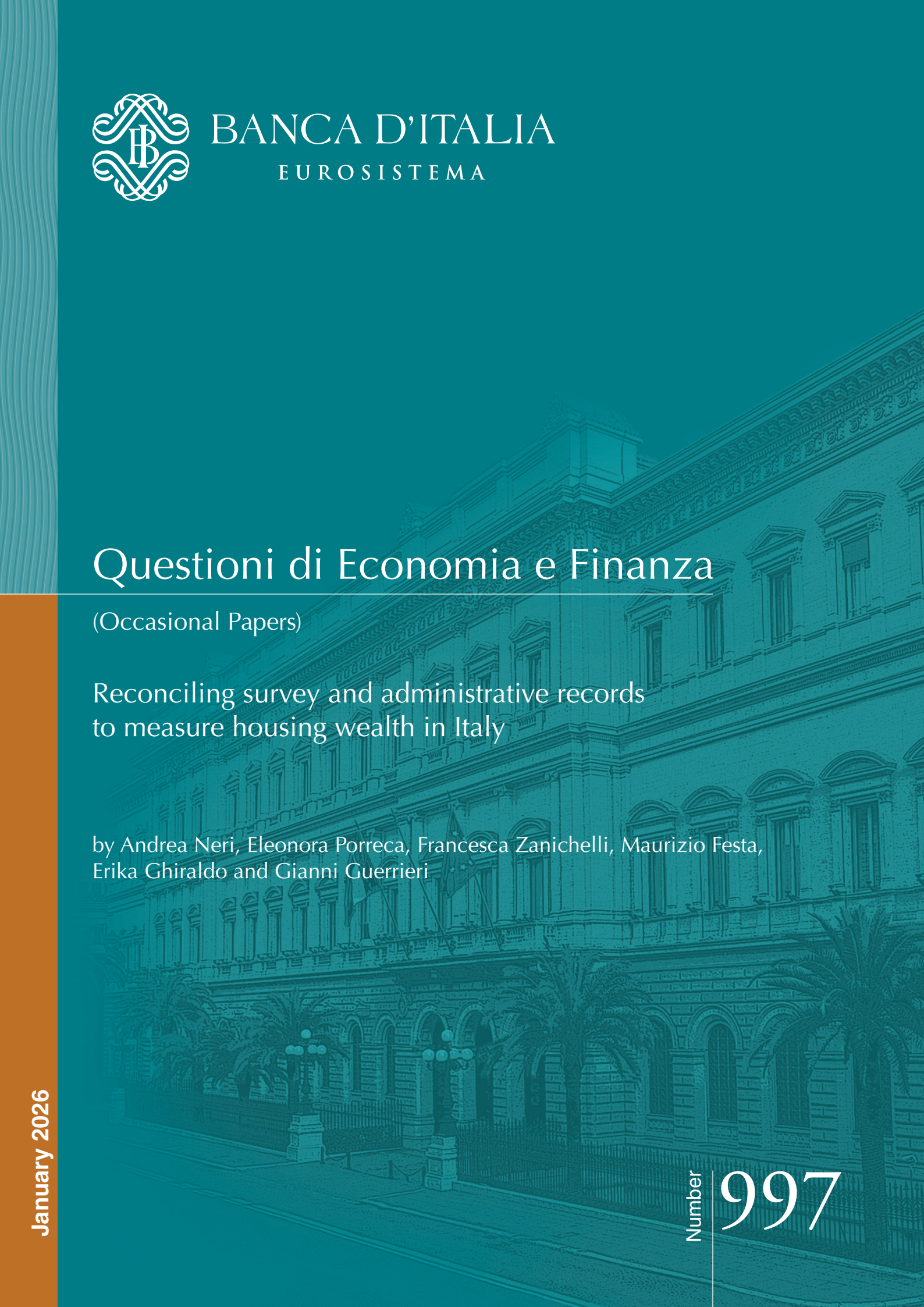

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RECONCILING SURVEY AND ADMINISTRATIVE RECORDS TO MEASURE HOUSING WEALTH IN ITALY

by Andrea Neri*, Eleonora Porreca*, Francesca Zanichelli*, Maurizio Festa**, Erika Ghiraldo** and Gianni Guerrieri**

Abstract

We compare survey and administrative data on housing wealth in Italy. While property ownership is broadly consistent, discrepancies emerge in the distribution due to secondary dwellings being omitted in surveys and to missing properties in administrative data, mainly due to the failure to register ownership transfers of inherited properties. To address this issue, we propose two integration approaches which lead to a more complete representation of the housing wealth distribution.

JEL Classification: C81, C83, D31.

Keywords: administrative data, data integration, household survey, housing wealth.

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** Real estate market Observatory managed by the Italian Revenue Agency.

1. Introduction

Accurately measuring households' housing wealth is essential for understanding economic inequality and informing policies aimed at reducing wealth gaps (Causa et al. 2019). Housing assets typically represent the largest component of household net worth and are a key determinant of financial stability across the population, as housing-related debt is the most important liability in households' portfolios. Reliable estimates of housing wealth are therefore critical for researchers, data producers and policymakers.

Traditionally, household surveys have served as the primary source of information on housing wealth. Over the past decade, however, the increasing availability of administrative data on households' economic conditions, together with the ability to link them to survey records, has opened new avenues for research and policy development. Each data source offers distinct advantages and limitations. Surveys are flexible, allowing researchers to customize questions to specific objectives and gather detailed insights on attitudes, behaviours, and economic conditions that administrative data often lack. However, surveys are prone to non-sampling errors: several factors, such as lack of knowledge, cognitive bias, social desirability, may lead to measurement inaccuracies and non-response. On the other hand, administrative data, while generally more accurate, are less adaptable because they are collected for operational purposes rather than research. These records can also contain errors or inconsistencies, as they may suffer from issues like mismatches during the data collection or measurement errors (e.g., Kapteyn and Ypma 2007, Abowd et al. 2013, Jenkins and Rios-Avila 2023).

Against this background, the aim of the study is to compare survey and administrative data on households' housing wealth in Italy, laying the groundwork for their potential integration. We examine the information provided by the two sources, considering their scope and nature, and highlight their respective strengths and limitations. Survey data come from the 2020 and 2022 waves of the Survey on Household Income and Wealth (SHIW), conducted by the Bank of Italy, which is linked with data from the Real Estate Market Observatory (OMI), managed by the Italian Revenue Agency. This dataset includes both administrative information from cadastral registers on housing ownership and the estimated housing market value, which is partly based on administrative transaction prices. For simplicity, we refer to this data as "administrative data".

In surveys, such as the SHIW, housing wealth is typically elicited through respondents' self-assessments of property values. This approach has the advantage of incorporating specific information known to the owner such as the property's condition, location utilities, or amenities. However, self-reported values may be affected by non-sampling errors, including limited knowledge of real estate market developments, cognitive biases, and social desirability effects.

Administrative estimates on properties' market values, on the other hand, are usually obtained by combining tax value of each property with an average transaction price of similar properties recently sold and located in the same area (Johansson-Tormod and Klevmarken 2022, Merikull and Room 2020). OMI follows this approach by combining the cadastral annuity of each property with average transaction prices. The administrative estimates might be subject to inaccuracies as well, due to a compositional error of transactions data and outdated tax values.

Recent literature uses administrative records on housing wealth mainly to analyse non-sampling errors in survey data (Johansson-Tormod and Klevmarken 2022, Merikull and Room 2020), though administrative data limitations are well acknowledged. In this study we recognize that both survey and administrative data on housing wealth have limitations and may provide incomplete representations of the phenomenon. In light of the emerged strengths and weaknesses, we propose two integrated measures considering the administrative and survey distribution as benchmarks respectively and integrating it with the other source.
The structure of the paper is as follows: section 2 describes the data sources and the matching process; section 3 presents the main results on the comparison of housing wealth information according to the two data sources; in section 4 the integrated approaches are proposed; conclusions are drawn in section 5.

2. Data

Survey data are drawn from the 2020 and 2022 waves of the Survey on Household Income and Wealth (SHIW), conducted by the Bank of Italy since the 1960s to study the economic conditions of Italian households. The SHIW collects detailed information on household members' characteristics (such as age, education, and occupation), income sources (from employment, pensions, transfers, etc.), and household wealth (including financial and real assets as well as liabilities). Information on housing wealth covers both the main residence and any other properties—residential or non-residential—owned by each household as of the end of 2020 and 2022. Respondents are asked to provide an assessment of the market value of each property at the time of the interview (2021 for the 2020 wave and 2023 for the 2022 wave). The survey also collects information on property type, ownership share, and usage. The final sample size amounts to 9,641 households for the 2022 wave and to 6,239 households for the 2020 wave, a number significant lower due to the several difficulties in the fieldwork caused by the outbreak of the Covid-19 pandemic.
The administrative data are sourced from the Real Estate Market Observatory (OMI), managed by the Italian Revenue Agency[2]. These data include the market value of individual properties obtained by combining average transaction values with data taken from the cadastral archive. Specifically, the market value of each property is estimated by multiplying the average price expressed in euro per square metre, as defined for the corresponding OMI zone[3] and building type, by a correction coefficient that considers the cadastral annuity and by the unit surface area, thus obtaining an estimated market value (VSM).[4] OMI values have the advantage of enabling assets to be estimated even in territorial areas where market prices are insufficient to obtain statistical values. OMI values, in fact, are "not the measure, more or less faithful, of the economic value expressing supply and demand matching, but the average value of the potential "wealth", per unit area, of the stock in each OMI zone" (OMI, 2025).

[2] The Real Estate Market Observatory (OMI) in the Revenue Agency (Real Estate Market Observatory - Agenzia delle Entrate) manages the database of real estate market values, relating to purchases and rentals, throughout the national territory. The values are updated and published every six months, freely available on the website of the Agenzia delle Entrate (in: Osservatorio del Mercato Immobiliare - Quotazioni immobiliari - Agenzia delle Entrate).
[3] The OMI identifies specific areas in all Italian municipalities, the OMI zones. These sub-municipal areas are homogeneous in terms of real estate market, where there is a substantial uniformity of appreciation for economic and socio-environmental conditions.
[4] For further information on VSM see Annex 6 to the Real Estate Market Observatory Manual (OMI, 2025).

However, although this method offers standardised valuations, it is subject to some limitations. OMI values catch general market values within an OMI zone, but do not account for single unit characteristics such as, for example, floor, view or exposure. Conversely, corrections made using cadastral annuity to capture specific property unit characteristics are limited by the obsolescence of cadastral property unit classification. Cadastral annuity refer to the period 1988–1989, which introduces further inaccuracies.[5] The VSM is calculated for dwellings, offices and shops, and for appliances (warehouses, garages and parking spaces). The tax value of the property, which is the taxable base for municipal property taxes, has been assigned to other non-residential building units.

To compare the two sources, a record linkage procedure was implemented by the Bank of Italy in collaboration with the Revenue Agency. The linkage is performed at the individual level for each household member, using the unique Social Security Number (SSN) to match survey respondents with corresponding administrative records. The linkage was conducted by the Revenue Agency under strict confidentiality safeguards. Fiscal identifiers were used only to create the match at the individual level, after which the data were aggregated at the household level and fully anonymized, ensuring their use exclusively for statistical purposes. The lack of unique property identifiers in the survey data makes it impossible to link the two sources at the single property level. After linkage, the information from the two sources is harmonized to ensure comparability. More specifically, harmonization is needed in order to align reference periods and restrict the analysis to the same types of properties in the two data sources; a detailed description of the harmonization process is provided in Appendix A. The final matched dataset includes, for each household, the stock and ownership share of properties according to both sources, as well as the OMI-based market value and the SHIW self-reported value corresponding to the owned share. This information is available by property type (residential vs. non-residential) and by property use (main residence, rented, or other use).

In order to obtain representative housing wealth estimates survey sampling weights are used throughout the analysis for both survey and administrative values.

3. Comparing housing wealth in survey and administrative data

This section assesses how consistently housing wealth is reported between survey and administrative data, focusing on both ownership rates and value estimates, overall and by property type and use.

3.1 Descriptive Evidence

Table 1 shows ownership rates and average property values in the SHIW and in the administrative dataset. Overall, the two sources are well aligned: according to both around three quarters of Italian households own at least one property. However, the survey shows lower ownership rates for non-residential properties and properties different from the main residence. Indeed, only 5 per cent of households report owning at least one rented property in the survey, compared to twice as many according to the administrative records. Likewise, only 16 per cent of households declare ownership of properties used for other purposes,

[5] The political debate on updating cadastral values has been ongoing for years in an effort to make taxation fairer.

whereas administrative data indicate a share more than twice as high. The same results are mirrored also in the average number of properties, which is overall in line between the two sources, but it is underestimated in the SHIW especially for non-residential properties and properties other than the main residence.

The overall average property values are broadly in line as well, with the SHIW value slightly below the administrative estimate (6 and 4 per cent lower in 2020 and 2022 respectively). The breakdown by property use suggests that different reporting behaviours in the survey might compensate each-other: when reported, property values tend to be higher on average than those recorded in administrative data, as is the case for the main residences. Conversely, for rented and other dwellings, non-reporting of properties seems to prevail, leading to lower average values observed in survey data.

Table 1: Comparison between SHIW and Administrative data

	Ownership rate (%)		Average value		Average number of properties		Total number of properties (millions)	
	SHIW	**Admin**	**SHIW**	**Admin**	**SHIW**	**Admin**	**SHIW**	**Admin**
2020								
All properties	74.8	74.2	188,251	199,391	1.01	1.20	25.3	30.1
By property type								
Residential	74.5	73.9	178,033	191,145	0.97	1.13	24.3	28.5
Non-residential	4.3	6.3	10,218	8,246	0.04	0.07	1.0	1.7
By property use								
Main residence	72.6	70.6	145,127	121,678	0.71	0.61	17.9	15.3
Rented	5.2	10.6	12,366	21,915	0.09	0.16	2.2	4.1
Other	15.7	38.4	30,757	55,797	0.21	0.43	5.2	10.8
2022								
All properties	76.0	76.3	205,393	214,398	1.06	1.21	26.6	30.3
By property type								
Residential	75.9	76.0	195,564	207,127	1.02	1.15	25.5	28.7
Non-residential	4.3	6.6	9,829	7,272	0.04	0.06	1.1	1.6
By property use								
Main residence	74.3	72.5	155,040	130,871	0.73	0.62	18.2	15.6
Rented	5.7	11.6	17,572	24,730	0.10	0.16	2.5	3.9
Other	15.8	39.1	32,782	58,797	0.23	0.43	5.9	10.9

Note: the table shows the ownership rate in SHIW and Admin (share of households with at least one property, overall and by type and use), the average value in SHIW and Admin (overall and by type and use among all households), the average and total number of properties (overall and by type and use among all households). Average values are computed for all households, assigning zero to those with no properties. Weighted estimates.

According to Figure 1, the value of the main residence accounts for about 76 per cent and 61 per cent of total housing wealth in the SHIW and administrative data, respectively. In contrast, the value of properties used for other purposes represents 16 per cent in the survey, compared to 28 per cent in the administrative records. The breakdown by quartiles of the housing wealth distribution reveals that discrepancies in the housing wealth composition by property use are

most pronounced in the upper tail. In the top quartile, the main residence still accounts for over 60 per cent of total housing wealth in the SHIW, whereas it represents only about half in the administrative data. For this group, only 24 per cent of total housing wealth is attributed to properties used for other purposes in the survey, while the corresponding share in the administrative data reaches approximately around 35 per cent.

This descriptive evidence is coherent with the well-known behaviour of more affluent survey respondents who tend to omit secondary properties other than the main residence. This might be due to several reasons, such as the desire to speed up the interview, social desirability bias and difficulties in recalling all owned properties (Cannari and D'Alessio, 1990).

Figure 1: Properties' value by use along the housing wealth distribution

Note: the figure shows the share of property value by use over total property value along the SHIW housing wealth distribution on the left and along the administrative housing wealth distribution on the right. Weighted estimates.

To structure our analysis, we classify households into six categories based on how the two sources align:

- *Case 0. No properties in SHIW and Admin*: households with no properties both in the SHIW and in the administrative dataset.
- *Case 1. No properties in SHIW*: households do not report having any property in the SHIW, whereas they have at least one property according to the administrative data source.
- *Case 2. No properties in Admin*: households do not have any property in the administrative dataset, whereas they have at least one property according to the SHIW. This situation can occur, for instance, due to the lack of registration of properties in the cadastral archive.

- *Case 3. Missing properties in SHIW*: households have at least one property in both data sources, but the number of properties is lower in the SHIW dataset.
- *Case 4. Missing properties in Admin*: households have at least one property in both data sources, but the number of properties is lower in the administrative dataset.
- *Case 5. Equal number of properties in SHIW and Admin:* households have the same number of properties in both data sources. It is important to clarify that a difference in total housing wealth between the two sources does not necessarily imply an error in either the survey or the administrative source.

To be noted that for the analysis, owning at least one property includes also holding even just a share of it.[6]

Table 2 shows the distribution of households in the six recording categories: only around 6 per cent of households do not have any property in the SHIW or administrative dataset, respectively, whereas they have at least one in the other. Almost 30 per cent of households report having properties in both datasets, but the number of properties is lower in the SHIW than in the administrative dataset. Missing properties in the administrative dataset is sensibly less common (around 14 per cent of households). Furthermore, there does not seem to be any significant difference in the reporting categories distribution between the two years.

Table 2: Share of households by recording categories

	2020	2022	Total
Case 0) No properties in SHIW and Admin	19.6	18.3	18.8
Case 1) No properties in SHIW	5.6	5.7	5.6
Case 2) No properties in Admin	6.3	5.4	5.8
Case 3) Missing properties in SHIW	28.7	28.0	28.3
Case 4) Missing properties in Admin	13.5	14.8	14.3
Case 5) Equal number of properties in SHIW and Admin	26.5	27.8	27.3
Total	100.0	100.0	100.0

3.2 Regression Analysis

To identify the factors associated with recording discrepancies, we estimate regression models accounting for property characteristics and household demographics. Given the similar behaviour in the two years, in this paragraph we only show results for the total sample (2020 and 2022 together); regression results are however robust when models are estimated separately for the two waves.

We start by analysing cases 1 and 2. According to Table 3, these households own on average less properties and of lower value than households reporting at least one property in both datasets. We run two Probit models estimating the probability of reporting no properties in the SHIW and in the administrative dataset respectively as a function of properties' characteristics as reported in the other source and controlling for household socio-economic

[6] As robustness analysis, we also have repeated the analysis by rounding the shares owned to the nearest integer number in order to check whether small differences in the shares drive our results. The analysis with integer shares does not substantially differ from the results shown.

information, geographic area, and interviewer assessment on respondent's reliability during the interview (Table 4, cases 1 and 2 respectively). Households in the lower part of the administrative housing wealth distribution and with properties other than their main residence are more likely to report no property in the SHIW. This might be due to respondents forgetting to report properties of low value different than their main residence. Panel households are less likely to completely omit properties, possibly due to higher trust and commitment to the survey. On the other hand, properties not reported in the administrative source are more often not purchased (i.e. inherited or obtained in other way), likely due to the lack of registration of ownership transfers of inherited properties. Unreported properties in administrative data are generally of low value, since their complete absence mainly concerns households owning few and modest dwellings.

Table 3: Properties' characteristics by households recording category

Recording categories	(1)	(2)	(3)	(4)	(5)	
	No properties in…		Missing properties in …		Equal number of properties	
	…SHIW (Admin value)	…Admin (SHIW value)	…SHIW (Admin value)	…Admin (SHIW value)	(Admin value)	(SHIW value)
Average number of properties	0.8	1.1	2.4	2.1	1.2	1.2
Average value	126,085	177,188	397,432	343,539	218,276	221,152
Share of properties by						
Type of property						
Residential	92.9	97.0	93.5	93.7	97.8	97.4
Other	7.1	3.0	6.5	6.3	2.2	2.6
Use of property						
Main residence	53.8	83.4	36.8	45.3	80.2	82.5
Rented	10.6	1.6	15.9	15.4	6.7	5.9
Used for other purposes	35.6	15.0	47.2	39.3	13.0	11.6

Note: the table shows average number and value of all properties owned by households by recording category, and the share of number of all properties owned by type and use and by recording category of households. Weighted estimates.

Table 4: Probability of not recording any property in the SHIW/administrative dataset

(1) No properties in SHIW (case 1)		(2) No properties in Admin (case 2)	
Admin housing wealth: 1 quartile	0.156***	SHIW housing wealth: 1 quartile	0.051***
	(0.015)		(0.014)
Admin housing wealth: 2 quartile	0.059***	SHIW housing wealth: 2 quartile	0.026*
	(0.017)		(0.013)
Admin housing wealth: 3 quartile	0.042***	SHIW housing wealth: 3 quartile	-0.006
	(0.016)		(0.014)
Share of main residence properties	-0.046***	Share of main residence properties	-0.040**
	(0.014)		(0.019)
Share of rented properties	0.007	Share of rented properties	-0.194***
	(0.021)		(0.049)
		Share of purchased properties	-0.041***
			(0.009)
Panel household	-0.022***		

	(0.008)		
R-squared	0.17	R-squared	0.10
Observations	13,089	Observations	13,040

Note: robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. In Col (1) the dependent variable is equal to 1 if the household does not report any property in the SHIW but has at least one property in the Admin data, it is equal to 0 if the household has at least one property in both datasets. In Col (2) the dependent variable is equal to 1 if the household does not report any property in the Admin data but has at least one property in the SHIW, it is equal to 0 if the household has at least one property in both datasets. Cols (1) and (2) control also for socio-economic information of the household main earner (sex, age, education, occupational status), household size, geographic area, year and interviewer score on properties (subjective evaluation on a scale from 1 to 10 given by the interviewer in the SHIW on the reliability of the information provided on properties).

Moving to the other three recording categories, Table 3 shows that households that under-report the number of properties in the SHIW and in the administrative dataset (cases 3 and 4 respectively) are likely to be more affluent as they have on average a higher number of properties, of higher overall value and more often used for purposes other than the main residence with respect to households reporting the same number of properties. Again, we run Probit models estimating the probability of having missing properties in the SHIW and in the administrative dataset (Table 5, cases 3 and 4 respectively). Households belonging to the higher quartiles of the administrative housing distribution and those owning other properties (not main residence and not rented) are more likely to under-report properties during the interview. On the other hand, households with properties not purchased or used for purposes different than the main residence or rented are more likely to have a lower number of properties registered in the administrative source. Again, this is likely due to a lack of updates in the cadastral archives.

Among households recording the same number of properties in the two data sources (case 5), the main residence represents the main property (Table 3). In this case the average values in the two sources are quite in line; however, the survey average is slightly higher than the administrative one, as households tend to overestimate the value of their main residence (Benedetti et al., 2026). We run an OLS regression of the absolute value of the difference between the survey and the administrative housing wealth among households declaring the same number of properties in both datasets (Table 5, case 5). The difference in property values is higher in the highest quartile of the housing distribution and for households owning properties other than the main residence. Panel households tend to report values closer to the ones registered in the administrative source.

Table 5: Probability of missing properties and difference in property value

	(1) Missing properties in SHIW (case 3)	(2) Missing properties in Admin (case 4)	(3) Equal number of properties (Difference in property value - absolute value) (case 5)
Housing wealth: 1 quartile	-0.364***	-0.0151	-91,861***
	(0.0331)	(0.0214)	(9,156)
Housing wealth: 2 quartile	-0.154***	-0.0324	-80,440***
	(0.0269)	(0.0198)	(8,765)
Housing wealth: 3 quartile	-0.0525**	-0.0207	-75,873***
	(0.0236)	(0.0192)	(7,825)
Share of main residence	-0.838***	-0.369***	-51,871***

	(0.0373)	(0.0271)	(18,628)
Share of rented properties	-0.375***	-0.105**	6,407
	(0.0509)	(0.0447)	(23,459)
Share of purchased properties		-0.0508***	
		(0.0151)	
Panel household	0.0307		-11,956**
	(0.0189)		(5,416)
R-squared	0.26	0.10	0.13
Observations	12,277	12,277	4,184

Note: robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. In Col (1) the dependent variable is equal to 1 if the household reports a lower stock of properties in SHIW than in Admin, it is equal to 0 otherwise. In Col (2) the dependent variable is equal to 1 if the household reports a lower stock of properties in Admin than in SHIW, it is equal to 0 otherwise. In Col (3) the dependent variable is the absolute difference between the properties' value in the SHIW and in the Admin data among households reporting the same number of properties in both datasets. Cols (1) and (2) show marginal effect of Probit model; Col (3) shows OLS coefficient. Cols (1)-(3) control also for socio-economic information of the household head (sex, age, education, occupational status), household size, geographic area, year and interviewer score on properties (subjective evaluation on a scale from 1 to 10 given by the interviewer in the SHIW on the reliability of the information provided on properties). Housing wealth quartiles refer to administrative data in Cols (1) and (3) and to SHIW data in Col (2).

3.3 Decomposition of the mean difference of housing wealth

Given the recording categories defined above, it is possible to decompose the difference in the average housing wealth between the survey and the administrative sources in the contributions given by households in each group. Let $\bar{y}_{i,shiw}$ and $\bar{y}_{i,admin}$ with $i = 1, \dots, 5$ be the (weighted) average housing wealth according to the SHIW and to the administrative data of the groups defined above. Let $\overline{w}_i$ with $i = 1, \dots, 5$ be the relative weighted frequencies of each of the five household groups with at least one property, then the average housing wealth in the two datasets can be obtained as:

$$\bar{y}_{shiw} = \bar{y}_{2,shiw}\overline{w}_{2,shiw} + \bar{y}_{3,shiw}\overline{w}_{3,shiw} + \bar{y}_{4,shiw}\overline{w}_{4,shiw} + \bar{y}_{5,shiw}\overline{w}_{5,shiw}$$

$$\bar{y}_{admin} = \bar{y}_{1,admin}\overline{w}_{1,admin} + \bar{y}_{3,admin}\overline{w}_{3,admin} + \bar{y}_{4,admin}\overline{w}_{4,admin} + \bar{y}_{5,admin}\overline{w}_{5,admin}$$

The difference between the two mean values is:

$$\begin{aligned}\bar{y}_{shiw} - \bar{y}_{admin} &= (A)\left[\bar{y}_{2,shiw}\overline{w}_{2,shiw}\right] - (B)\left[\bar{y}_{1,admin}\overline{w}_{1,admin}\right] + (C)\left[\bar{y}_{3,shiw}\overline{w}_{3,shiw}\right. \\ &\left. - \bar{y}_{3,admin}\overline{w}_{3,admin}\right] + (D)\left[\bar{y}_{4,shiw}\overline{w}_{4,shiw} - \bar{y}_{4,admin}\overline{w}_{4,admin}\right] \\ &+ (E)\left[\bar{y}_{5,shiw}\overline{w}_{5,shiw} - \bar{y}_{5,admin}\overline{w}_{5,admin}\right]\end{aligned}$$

where term (A) refers to households with no properties in the administrative register, term (B) refers to households with no properties in the SHIW, terms (C) and (D) refer to households with missing properties in the survey and administrative register respectively, and term (E) corresponds to difference in housing value for households with the same number of properties in both sources.

The decomposition shows that missing properties in the SHIW is the most important source of the difference and, as seen in the previous analyses, this is mainly due to the under-reporting of the stock of properties other than the main residence in the survey (Table 6).

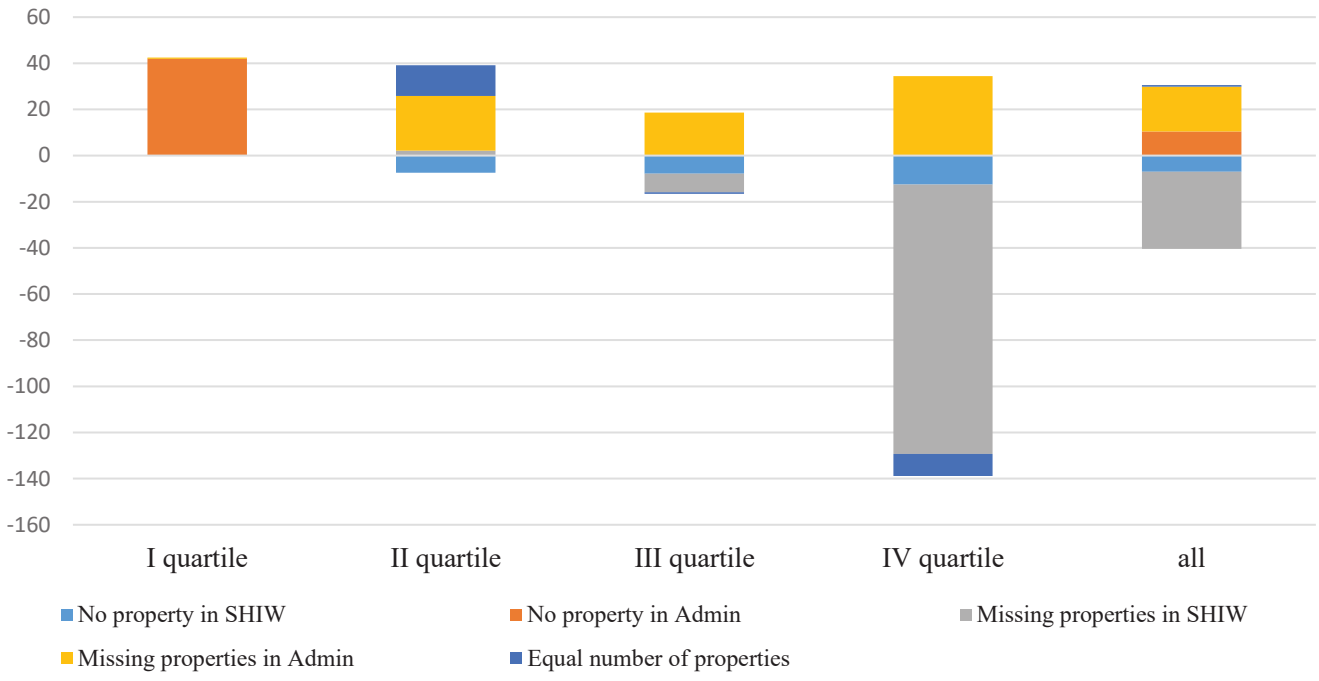
The second most important source is missing properties in the administrative data, which is likely due to a lack of updates in the cadastral archives for non-purchased properties.
Difference in property values for households with the same number of properties in the two data sources accounts for a negligible part of the difference.
The same decomposition, repeated along the administrative housing wealth distribution, shows that the highest average difference arises in the fourth quartile, where missing properties in the SHIW (C) is the most important source of the difference (Figure 2). Missing properties in the administrative data (D) play an important role along the entire distribution, while difference in values (E) is confirmed to be negligible.

Table 6: Decomposition of the difference in average housing wealth

Average housing wealth (euro)			Difference due to (euro, %)				
SHIW	Admin	Difference	No property in SHIW (A)	No property in Admin (B)	Missing properties in SHIW (C)	Missing properties in Admin (D)	Equal number of properties (E)
198,658	208,502	-9,844	-6,944	10,472	-33,509	19,357	785
			71%	-106%	341%	-197%	-8%

Note: the left panel of the table shows the average housing wealth in the two datasets and their difference. The right panel of the table shows the contribution of total and partial non-recording in the survey and in administrative register and of the difference in average housing wealth for households with the same number of properties. Weighted estimates.

Figure 2: Decomposition of the difference along the administrative housing wealth distribution
(thousands of euros)



4. Integrated housing wealth: combining administrative and survey data

The previous section highlighted the strengths and weaknesses of both survey and administrative data on housing wealth. Since neither source provides a complete and unbiased measure on its own, we propose two integration strategies for combining survey and administrative data on housing wealth. Each method aims to exploit the strengths of one data source — treating it as a benchmark — and to overcome its limitations by integrating it with the other source.

The first is an *"integration with administrative data as benchmark"*. This method treats administrative data as the primary source for both property stock and value and supplements it with survey-reported properties only when households report more holdings in the SHIW than in the administrative register. This approach compensates for potentially missing inherited or non-purchased dwellings that are not registered.

The second method is an "*integration with survey data as benchmark"*. In this approach, the survey serves as the primary source, preserving self-reported property values and ownership declarations. Administrative records are used to supplement the dataset only when the survey under-reports the number of properties.

Both approaches are summarized in Table 7, which outlines the benchmark source, criteria for supplementation, and the resulting outcome.

Table 7: Comparison of Integration Methods wealth

Integration Method	Benchmark Source	Supplemented by	Outcome
Method 1: Administrative Benchmark	Administrative Data	Survey Data (for households with more properties reported in SHIW)	Ensures comprehensive coverage of the full property stock, including non-purchased properties missing in administrative data.
Method 2: Survey Benchmark	Survey Data	Administrative Data (for households with more properties reported in Admin)	Accounts for underreporting in the survey, ensuring greater alignment with actual property ownership, at the same time keeping households' self-assessments as benchmark.

Figure 3 and Table 8 report the housing wealth distributions according to the observed measures in the two data sources and to the integrated approaches. The results show that survey and administrative distributions are quite aligned, although the SHIW values are lower than the administrative ones in the top part, as a result of the under-reporting of stock during the interview. The Gini coefficient is higher in the administrative distribution (0.62 vs. 0.59 in 2020 and 0.61 vs. 0.60 in 2022) likely due to more wealthy households not reporting secondary properties in the survey and poorer households overestimating the value of their main residence in the survey.

The distributions obtained with the two integration approaches show higher values than the administrative and survey ones along the entire distribution, because by construction they add all properties gathered from the survey/register when these are higher in number than those reported in the register/survey source. Higher values are observed especially in the lower tail of the integrated distributions. Therefore, the Gini coefficients are slightly lower than those obtained with the observed housing wealth measures. The two integrated distributions are

quite in line, possibly because of the substantial share of households reporting a lower number of properties in the survey that are replaced with administrative properties in the integration with survey benchmarks and, therefore the latter integration is broadly aligned to the integration with administrative benchmark.
Overall, the two integration approaches lead to higher ownership rates, i.e. 80% in 2020 and 82% in 2022, more in line with the estimates coming from the EU-SILC for Italy[7], according to which 81% and 80% of households owned the main residence in 2020 and in 2022 respectively.

Figure 3. Housing wealth kernel densities

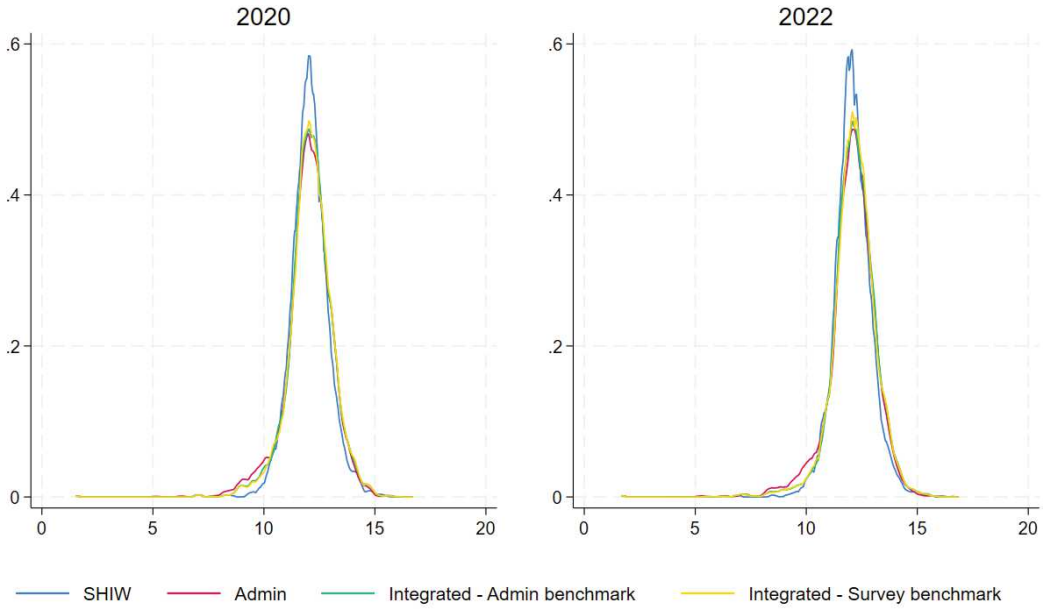


Table 8. Housing wealth distributions

	Ownership rate	mean	sd	p10	p25	p50	p75	p90	p95	Gini
Housing wealth distribution 2020										
SHIW	74.8	188,251	315,640	0	0	130,000	230,000	400,000	600,000	0.595
Admin	74.2	199,391	328,035	0	0	122,342	254,088	470,089	657,186	0.623
SHIW/Admin		0.94	0.96			1.06	0.91	0.85	0.91	
Integration – Admin benchmark	80.4	227,011	366,405	0	43,414	141,923	266,265	500,000	730,868	0.593
Integration – Survey benchmark	80.4	229,321	367,884	0	44,370	146,777	280,000	500,000	741,500	0.592
Admin b/Survey b		0.99	1.00		0.98	0.97	0.95	1.00	0.99	
Housing wealth distribution 2022										
SHIW	76.0	205,393	443,189	0	25,000	131,500	250,000	420,000	600,000	0.601
Admin	76.3	214,398	368,645	0	8,524	134,871	272,752	490,615	711,673	0.609

[7] Indagine sulle condizioni di vita (EU-SILC) [http://siqual.istat.it/SIQual/visualizza.do?id=5000170]

SHIW/Admin		0.96	1.20		2.93	0.98	0.92	0.86	0.84	
Integration – Admin benchmark	81.7	245,651	410,325	0	60,000	152,327	299,123	526,458	790,000	0.583
Integration – Survey benchmark	81.7	245,449	414,999	0	59,072	150,000	300,000	521,980	790,285	0.583
Admin b/Survey b		1.00	0.99		1.02	1.02	1.00	1.01	1.00	

5. Conclusions

In this work, we have compared survey data on households' housing wealth with data from the administrative OMI data. The analysis suggests that the overall ownership rates and the housing wealth averages and distributions are well aligned between the two data sources. However, a deeper analysis reveals some discrepancies both in the stock owned and in the housing values. Administrative data provide a more complete picture of the housing stock owned by Italian households, which is under-estimated in the SHIW because respondents tend to omit other properties than the main residence. Nevertheless, survey data include also non-purchased properties, which are sometimes lacking in the administrative source. Focusing on the value of properties, the two data sources are in line both on average and along the housing wealth distribution. However, this is also due to the fact that households report higher values during the interview, partially offsetting the under-reporting of the property stock.

Based on these results, we present two integrated approaches to combining the two sources. The first is an *"integration with administrative data as benchmark"*, where administrative data are complemented by adding SHIW properties for all households reporting a higher number of properties in the survey than in the administrative register to compensate for non-purchased properties lacking in the register. The second is an *"integration with survey data as benchmark"*, where SHIW records are complemented by adding administrative properties for all households reporting a higher number of properties in the administrative register than in the survey, to compensate for the under-reporting during the interview. Both integration approaches lead to a higher ownership rate, more in line with external sources, and lower inequality of housing wealth, as they better capture the lower part of the distribution. The two integrated distributions are quite in line. Nevertheless, the integrated distribution with survey data as benchmark displays higher values than the one with administrative benchmark, reflecting the higher self-assessed values of households.

This analysis suggests that a joint use of survey and administrative data could improve the estimation of households' housing wealth. Each source has strengths and limitations. They can be used to complement each other by adding information missing from the other source in a flexible way depending on the scope of the analysis.

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Appendix

A Administrative housing market value

This section describes how the OMI market value is estimated (OMI, 2025 - annex 6) and how the information between the datasets OMI and SHIW have been harmonized.

Denoting with Z the OMI zone, with T the estate type and with i the $i-th$ estate, it is assumed the following relation:

$$P_{ZT}: t_{ZT} = P_i: t_i$$

Where P_{ZT} is the OMI zone value per unit of surface, t_i is the cadastral annuity of the $i-th$ estate and t_{ZT} is the average cadastral annuity in the OMI zone. The quantity to be estimated is P_i, the market value per unit of surface. The OMI market value per square metre is calculated as:

$$V_{Mi} = P_{ZT}\frac{t_i}{t_{ZT}}S_i$$

Where S_i is the surface of the $i-th$ estate.

This computation is differentiated for residential estates and appliances because they differ in terms of unit of surface, but we refer to the methodological note for more details (OMI, 2025).

Focusing on the information harmonization between the two datasets, the following process have been applied:

1. **Year of reference**
   OMI: the stock and the market value of properties refer to the end of 2020 and the end of 2022.
   SHIW: the stock of properties refers to the end of 2020 and the end of 2022. The self-reported value of properties refers to the period of the interview, i.e. 2021 for the 2020 wave and 2023 for the 2022 wave.
   Harmonization: variations of OMI market values at municipal level between 2020 and 2021 are applied to 2020 OMI market values in order to take them to 2021; variations of OMI market values at municipal level between 2022 and 2023 are applied to 2022 OMI market values in order to take them to 2023.

2. **Property stock**
   OMI: number of properties and share owned by the household.
   SHIW: number of properties and share owned by the household.

3. **Property value**
   OMI: market value related the share belonging to the household. If the market value is not available, it corresponds to the cadastral value multiplied by a regional coefficient, represented by the ratio between the regional average OMI market value and the regional average cadastral value, in order to update the cadastral value at the market value.
   SHIW: self-reported reported value for the whole property (VALABIT).
   Harmonization: in SHIW we consider only the property shares owned by the household (VALABIT*QUOPRO/100).

4. **Property right**
   OMI: ownership, bare ownership, right on others' property.

SHIW: properties under ownership and bare ownership are considered in the wealth computation.

Harmonization: all types of properties with right on others' property are excluded in OMI.

5. **Type of property**

   a. **Residential and appliances**

   OMI: residential properties belong to the cadastral categories of noble residence, civil residence, economic residence, poor residence, ultra-poor residence, rural, residence, villas, castles and historical residences, traditional residence.[8] Appliances belong to the cadastral categories of warehouses up to 30 square metre, stables and garages up to 50 square metre, parking spaces, basements, storages.[9]

   SHIW: residential properties refer to the main residence (section D) and others residential properties with the following use (section ALLD1): holiday home, other use by household, rented, unoccupied, usufruct, used free of charge (TIPOIMM=1 & USOIMM=2,3,4,5). The value of the main residence includes also the value of its appliances. Other appliances (section ALLD1) refer to: warehouses up to 50 square metre (TIPOIMM=3 & SUPAB<50) and garage, basements and parking spaces (TIPOIMM=6). Information on the type and the acquisition of properties reported in section ALLD1B is not available because, in order to limit the burden of the interview, this section summarises the value and the number of properties from the fourth property and on. We assume that properties in section ALLD1B are residential.

   Harmonization: on the one hand in SHIW the value of the main residence includes the value of its appliances, and on the other hand in OMI it is not possible to identify which appliances belong to the related main residence when more than one are recorded for each household. Therefore, we collapse into one category all the residential properties and appliances both in SHIW and in OMI. For households with residential properties, the number of appliances is set to zero in both datasets. For households with only appliances, the stock is maintained.

   b. **Non-residential properties**

   OMI: non-residential properties refer to the cadastral categories of offices, stores, laboratories, hotels, estates manufactured for commercial activities, public offices, warehouses more than 30 square metre, stables and garages more than 50 square metre.[10] Other estates refer to the cadastral categories of estates manufactured for industrial activities, factories, estates manufactures for agricultural activities. [11]

   SHIW: non-residential properties (section ALLD1) refer to offices (TIPOIMM=2) shops (TIPOIMM=4), laboratories (TIPOIMM=5), warehouses more than 50 square metre, other dwellings with the following use: own use for self-employment,

[8] Cadastral codes: A/1, A/2, A/3, A/4, A/5, A/6, A/7, A/8, A/9, A/11.

[9] Cadastral codes: C/2 up to 30m^2; C/6 and C/7 up to 50 m^2 ; PA, M, CN, G, D and are not in F/3 or F/4, i.e. not identified in the cadastral categories.

[10] Cadastral codes: A/10, C/1, C/3, D/2, D/5, D/8, B/4; C/2 more than 30 m^2; C/6 and C/7 more than 50 m^2; U, N, LA, AP and are not in F/3 or F/4, i.e. not identified in the cadastral categories.

[11] Cadastral codes: D/1 and D/7; I and are not in F/3 or F/4, i.e. not identified in the cadastral categories; D/10.

professional work, sole proprietorship or family business, let all or part of the year to firm/organisation/club (TIPOIMM=1 & USOIMM=1).

Harmonization: non-residential properties in the survey are selected to correspond to those classified in the cadastral register.