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The distributional impact of “imputed rent” in Italy

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1. Introduction

Most of the empirical analysis on economic inequality and poverty, within and between countries, focuses on the distribution of cash income, including mainly monetary earnings from labor, financial assets, private and public transfers. However, individuals and households benefit also from non-monetary income, which may arise from private in-kind transfers and from public services, regarding, in particular, education, health and housing.

A more comprehensive measure of the socio-economic disparity among individuals or households should, therefore, include not only monetary income, but also all the available in-kind benefits.

Not only is the size of non-cash income important, but also its distribution may have considerable effects on the distribution of well-being among different types of households.

In this paper, we focus on a specific type of non-cash income, the so-called "imputed rent". The concept of imputed rent can be defined, following the Commission Regulation (EC) no. 1980/2003, as "the value that should be imputed to all the households that do not pay full rent for their main residence, i.e. a market price rent, either because they are owner-occupiers or they live in accommodation rented at lower price than the market price, or because their accommodation is provided rent-free".

Therefore, imputed rent (henceforth, IR) consists of the income advantages enjoyed by households who reside either in owner-occupied housing or in rental housing, paying no rent or a below-market rent.

Several studies exist that focus the attention on the impact of in-kind benefits on income distribution; Frick and Grabka (2003), e.g., analyze the income advantages derived from owner-occupied housing in three different countries, Germany, UK and U.S.A., finding out, in particular, that imputed rent has a poverty reducing effect among the elderly.

Smeeding et al. (1992), instead, study the impact of imputed rent jointly with the effect of other non-cash income (health and education) on income distribution, inequality and poverty in seven countries, using LIS data set from the beginning of the 1980s (Italy is not included). Their research shows that the effect of non-cash income on the average levels is greater in most countries for middle-aged families with children and for the very elderly. In particular, the addition of housing benefits changes the distribution only marginally, if compared to health and education.

Focusing on the Italian case, several scholars have analyzed the distributional impact of in-kind benefits such as education and health (see, among others, Baldini et al., 2006 and Pacifico, 2006), but very few studies have looked at the importance of imputed rent, or housing, on the income distribution. Among those, Marical et al. (2006) propose a study on the distributional effect of publicly provided services, such as health, education and social

housing in OECD countries, including Italy; when adding social housing to cash income, inequality in Italy slightly reduces. At the same time, most of the studies on the Italian situation are results of government agencies and very few are from academic research. E.g. the Italian National Statistical Office (ISTAT) publishes each year a report on the distribution of the households' income which includes also the effects of imputed rent. The most recent report is ISTAT (2006), that compares, in terms of inequality and poverty, the cash income distribution with the distribution of income that includes imputed rent.[1] It emerges that, when partitioning the population by income quintile, the income share of the lowest quintiles increases and the income share of the highest quintiles reduces when adding imputed rent; therefore, the Gini index decreases both in the overall population and in each geographical region.

In the following, we analyze the incidence and the relevance of imputed rent on the Italian population and its effect on the income distribution, in particular on inequality and poverty, both for the overall population and for specific subgroups.

Two dataset are considered in this report, SHIW04 by Bank of Italy and the Italian version of EU-SILC, i.e. *"IT-SILC XUDB 2004 - versione Febbraio 2006"*. The former has been for a long time one of the most reliable source of information on income and wealth of the Italian households, while the latter is a new data set, which is part of a European project aimed at monitoring income and living conditions of households in different European countries. Comparisons of the results obtained from the analysis of both datasets seems of interest.

After a brief description of the data sets in the next section, we summarize, in Section 3, the main housing policies existing in Italy, while, in Section 4, we describe the structure of the Italian population according to tenure status and characteristics of the dwellings. In Section 5, we illustrate how to calculate the gross IR, defining a method that assigns to each individual or household the value of IR, i.e. the equivalent market rent that would be paid for a similar dwelling as that occupied; we then subtract the possible housing costs related to such gross measure, in order to obtain a net value of IR. Finally, in Section 6, we study the distribution of the new income (cash income plus IR) and compare it with the original distribution (concerning only cash income). Effects on the levels of inequality and poverty for both the overall income distribution and the distribution of subgroups are analyzed.

2. Data

Two different data sets are employed to analyse the impact of imputed rent on income distribution in Italy: SHIW04 and EU-SILC 2004.

2.1 SHIW04

[1] A brief description of their definition of imputed is provided in Section 2.

The first data set employed is the 2005 Survey provided by the Bank of Italy on the 2004 Household Income and Wealth (SHIW04). During the period between May and September 2005, families are interviewed about their income, wealth and other socio-economic conditions, regarding the preceding year. 20,581 individuals grouped in 8,012 households, representative of the entire Italian population (58.2 millions of individuals and 22.6 millions of households) are in the data set. The sample design of the SHIW04 data set consists of a two-stage sampling, according to which municipalities are first divided into strata and, then, for each strata, a sample of municipalities is chosen (first stage) and households are selected randomly within each municipality, from the register office records (second stage).

The imputed rent in our analysis is calculated focusing only on individuals living in private households with strictly positive disposable income; therefore, 39 individuals, with null income, are excluded from the original sample.

The income variable considered in SHIW04, to which we add the benefits of imputed rent, is the household disposable income, named “Y” and given by the sum of income from employed and self-employed labor, from pension, from public transfers, from wealth (including imputed rent), minus taxes and social contributions. Both the cash transfers related to housing policies and the imputed rent for the main residence are already included in such disposable income. From this income variable, therefore, we subtract the amount related to the imputed rent for the main residence in order to obtain a baseline income distribution net from imputed rent. We add, then, to such baseline income, the particular measures of imputed rent that will be defined and discussed throughout the paper and we study the changes in income distribution.

In order to calculate the imputed rent, we need to spot the potential beneficiaries and, for this scope, we partition the sample into groups, according to their tenure status; with the data set SHIW04, we define the groups as follows:

- owner: he who owns his main residence or is occupying the dwelling under redemption agreement (“a riscatto”);
- market tenant: tenant or subtenant paying rent at the prevailing or market rate; in particular, the kind of rent contract is either in derogation from rent-control law (“patti in deroga") or for non-resident/office or informal/friendship;
- subsidized tenant: tenant or subtenant whose accommodation is rented at a reduced price (lower price than the market price); in particular, this individual has a controlled rent or a welfare rent or is renting a council house. Inside this group, we distinguish between social tenant (whose landlord is the local government, such as town, province, region, pension fund) and the subsidized renter by the landlord, whose landlord is a private individual or a firm.

- rent-free tenant: individual who occupies an accommodation provided rent free; in particular, occupier with the contract of usufruct[2] belongs to this group.

2.2 EU-SILC 2004

The second dataset that we consider is the "IT-SILC XUDB 2004-versione Febbraio 2006", which contains the Italian data of the European Survey of Income and Living Conditions (EU-SILC), based on the European Union Regulation (no. 1177/2003) which defines the EU-SILC project. In particular, it contains extra variables beyond the ones common to all the European countries that are part of the project.

This survey replaces the former European Community Household Panel (ECHP) with the main scope of providing, through harmonized definitions and methods, comparable data, cross-sectional and panel, in order to both analyse income and welfare distribution among the households and to monitor the effect of European and national socio-economical policies.

The Italian EU-SILC sample contains 24,204 households and 61,429 individuals (52,509 aged 15 and more years old at the end of the referring income period of time) living in 731 municipalities. Like in SHIW04, for the analysis of this paper we take into account only the individuals with strictly positive income; therefore, we reduce to 24,048 households and 61,107 individuals.

Different from SHIW04, in EU-SILC 2004 information on income refer to the year 2003, while information on the living conditions refer to the moment of the interview, i.e. the year 2004.

The income variable considered in EU-SILC 2004 for the baseline income is the total disposable income "HY020", given by the sum, for all household members, of gross personal income components, gross cash benefits (self-employment, sickness, survivor, unemployment, disability), income from rental of property, family allowances, housing allowance, interests and profits from capital investments, minus taxes on income, wealth, social insurance contributions. Such baseline income, therefore, includes already all the direct public transfers for housing, if any.

Different from SHIW04, moreover, individuals are directly grouped into the tenure status of interest, i.e. owners with mortgage, outstanding owners, tenants at the market price, tenants with reduced rent and rent-free. Within the category of reduced tenants, it is not possible, however, to distinguish between tenants with rent reduced by the landlord and tenants in social housing.

Although EU-SILC project is going to include a specific variable for "imputed rent" starting from the year 2007, the responsible for Italian SILC, i.e. the Italian National Statistical Office

[2] Usufruct is the legal right to use and derive profit or benefit from property that belongs to another person, as long as the property is not damaged. Such legal right cannot hold after the death of the beneficiary.

ISTAT, has introduced already in the 2004 survey such information, motivated by the importance and the diffusion of ownership in Italy.

As described in ISTAT (2006), indeed, the EU-SILC dataset includes two specific variables, “FYAFFIMP” and “FYTOT_IMP”; the former variable refers to the imputed rent for the main residence, defined as:

- the rent at market price minus both the actual rent and public cash transfers for rent, if any, for reduced renters;
- the subjective rent evaluated by the household minus the ordinary housing costs for owners and rent-free.

The variable “FYTOT_IMP” refers to the total household income, given by the sum of disposable cash income and the imputed rent minus the annual interests paid for the mortgage, if any.

In Appendix D, we compare the results obtained by employing these two variables with the results obtained by applying the definition of IR proposed in the following Section 5.

3. Housing Policies in Italy

In order to understand the distributional impact of imputed rent in Italy, it seems important to review the state policies on housing market.

3.1 Instruments with respect to home-ownership

Taxation of net IR

In the years 2003 and 2004, there was no taxation in Italy for imputed rent of owners and of rent-free with the right of usufruct; for the personal income tax (IRPEF). The value of the total real estate owned by or in usufruct of a household was, indeed, part of the taxable income, but a full deduction equal to the value of the main residence was allowed. Such deduction may be considered a kind of incentive towards the ownership of the main residence.

Until the year 1998, imputed rent was taxed only for the amount of the dwelling’s value exceeding 568.10 Euro. Starting from 1998, this kind of taxation on imputed rent has been gradually eliminated, until the introduction, in the year 2001, of the full deduction of the main residence’s value described above; such deduction is still effective nowadays.

In 2003 and 2004, moreover, specific taxes had to be paid, when buying any kind of real estate, but the amount was reduced for the main residence; the buyer of a main residence had to pay to the notary public the following:

- the registry tax, with a flat tax rate of 3% (if the seller was a legally private individual or company), or the VAT, with a flat tax rate of 4%, plus the registry tax at a

fix amount (if the seller was a building enterprise); the fix amount for registry tax was of 129.11 Euro in 2003 and of 168 Euro in 2004;

- the mortgage tax in a fix amount of 129.11 Euro in 2003 and of 168 Euro in 2004;
- the land register (or cadastre) tax with a fix amount of 129.11 Euro in 2003 and of 168 Euro in 2004.

Such reduction could be obtained only if the following conditions held:

- the dwelling had to be not luxury,
- the owner had to reside (or was going to reside within the following 18 months) in the municipality where the dwelling was set,
- the buyer had not to possess with any kind of right on other dwelling in the same municipality,
- the new dwelling had to be, in Italy, the only main residence of the buyer,
- the new dwelling had to be the only real estate owned by a buyer residing abroad.

Such taxes were calculated on the actual amount of money paid to buy the dwelling.

Analogous taxes existed in 2003 and in 2004 both in case of inheritance of the main residence and in case of donation of the main residence from the partner, the (grand)parents or the (grand)children: the mortgage tax and the cadastral tax had to be paid each in a fix amount of of 129.11 Euro in 2003 and of 168 Euro in 2004.

Such indirect taxes are still effective and starting from the year 2007, two reforms have been introduced:

- the taxable value of the main residence may be chosen between the effective amount paid to buy the house and the cadastral value of the dwelling; the necessary condition requires that the effective amount paid is reported in the purchase's contract;
- the 19% of the expenses for a possible real estate broker (only in case of main residence) can be allowed from the personal income tax IRPEF, up to 1,000 Euro; such tax allowance can be enjoyed only for one fiscal year.

Taxation of capital gains on the sale of property

Until the year 2002, the sale of a real estate implied a payment of INVIM, a tax on the increment of the real estate's value. Such tax has been completely abolished.

After 2002 (and also in the years of interest 2003 and 2004):

- specific taxation exists on the capital gain that is obtained from the sale of the property, under specific circumstances; if a real estate is sold before five years from the purchase date, the capital gain (sale price minus purchase price) has to be added to the taxable income of the personal income tax. This taxation does not apply if the

real estate has been either the main residence during the period between the purchase and the sell of the dwelling or obtained by inheritance or obtained by donation (after at least 5 years from when the donor has bought it);

- if an owner sells the main residence in order to buy, within one year, a new non-luxury main residence, she can ask for a tax credit equal to the amount of the registry tax, or VAT, paid for buying the first dwelling, up to the amount of registry tax or VAT due for the second purchase.

Tax deductibility of mortgage interest

In the years 2003 and 2004 the Italian fiscal system included a tax allowance from the personal income tax IRPEF in case of mortgage for the purchase of the main residence; such allowance was equal to the 19% of the mortgage interests, up to a ceiling of 686.89 Euro (=19% of 3615.20 Euro). If the mortgage had begun before the year 1993, such allowance amount could be replicated for each mortgage's holder; if the mortgage had begun after 1993, the allowance was unique for all the mortgage's holders. Few conditions had to be satisfied, among which the requirement that the main residence had to be bought either one year before or one year after the beginning of the mortgage.

Deductibility of local property taxes

Neither deductions nor allowances are included in the Italian fiscal system for the local property tax, ICI.

Direct housing support/promotion for owner-occupiers

Regions dispose on monetary transfers in order to promote the purchase of the main residence (different names are given to these transfers:" Buono casa per le giovani coppie" in Emilia Romagna, "Mutui a Tasso Zero per le Giovani Coppie" in Veneto, "Risparmio Casa" in Trento; source: IreR (2005)); such contribution is usually addressed to special kinds of households, such as young couples, couples with young children and single mothers. The contribution is aimed either to reduce the mortgage interests paid for the purchase of the main residence or to provide a sporadic cash benefit; its amount differs among Regions.

Two are the main criteria followed in order to provide such contributions: eligibility criteria (means testing), and selectivity criteria (rankings that necessarily rule eligible individuals out, because of budget constraints).

The eligibility criterion differs according to the Regions: differences are mainly in the maximum age allowed for one or both members of the couple and in the maximum ceiling for the household's income and wealth.

Such contribution existed also in the years of interest 2003 and 2004.

Regional / local taxes

A direct Estate City tax (ICI) has been introduced in 1993, in order to tax the value of the total real estate, among which the main residence, owned by or in usufruct of the household. Such local property has to be paid by the owners or rent-free tenants in usufruct and cannot be deducted from the personal income tax. ICI is a proportional tax that does not take into account the household's income.

In 2003 and in 2004, ICI was calculated by applying the ICI marginal tax rate to the cadastral rent of estates (reassessed of 5% and multiplied by 100), minus a tax allowance of 103.29 Euro for the main residence. The tax rate was different for each Region and could vary between 4 and 7 per mil; such range had been established by the State.

Proposals of reforming ICI are nowadays under discussion: on the one hand, a revision of the real estate's actual cadastral values seems necessary, as they typically underestimate the real value of the property, and, on the other hand, it has been proposed to totally abolish ICI for the main residence and transform it into a local tax for all the other kinds of property.

3.2 Instruments with respect to renters

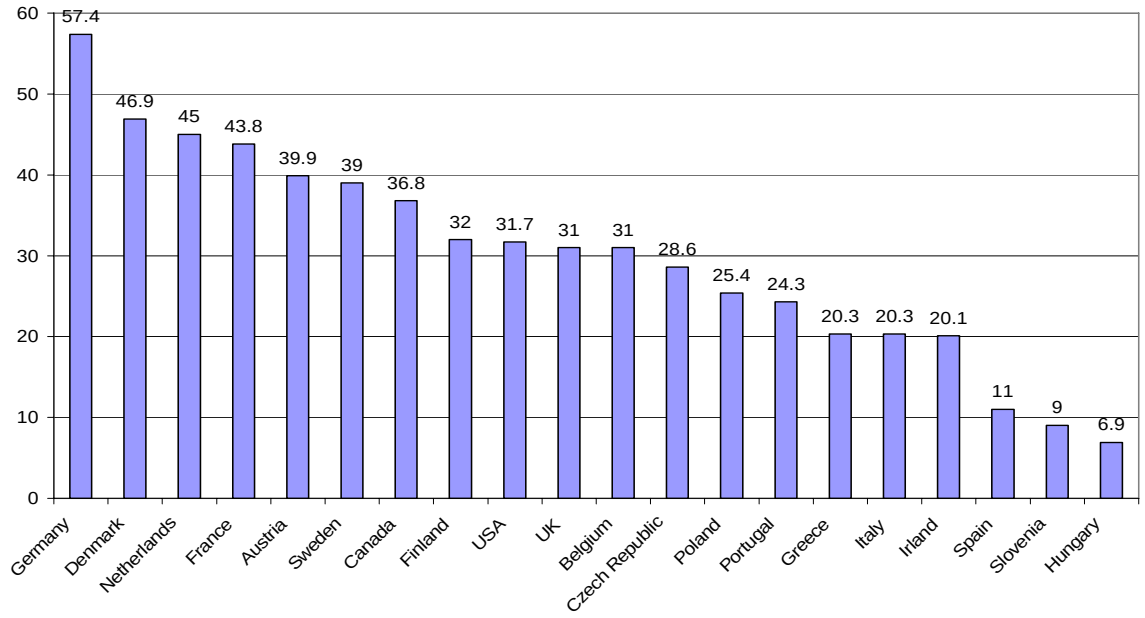
Social housing

In Italy the system of social housing for rent is coordinated by the Municipalities. An important political debate has recently arisen, about the inadequate house policy of the Italian government, if compared to the other European countries: Italy is characterized by weak house policies for the lower income classes, by a shortage of dwellings to be rented at reasonable rent and by a shortage of social housing.

A recent survey by Censis et al. (2007) shows that in Italy very few dwellings are available for rent and a satisfactory policy for social housing is missing. Figure 1 shows that Italy is quite far from the other European developed countries in terms of percentage of dwellings available for rent; only four European countries have a rent market smaller than the Italian one.

In Figure 2, the social housing of different European countries are compared; also in this case, Italy is located among the countries with lowest supply of social housing.

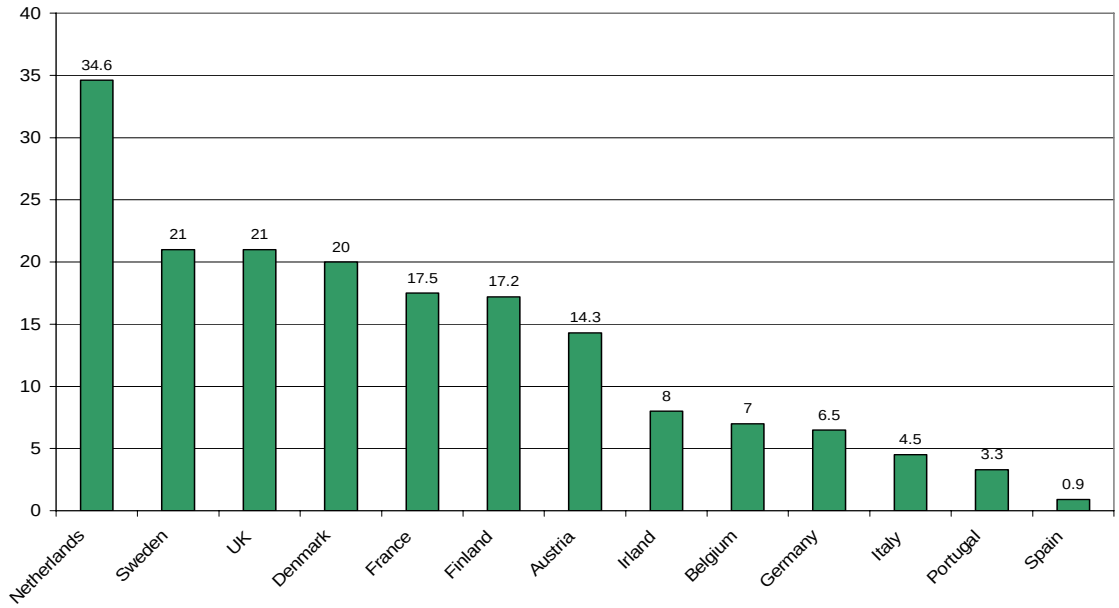
Fig. 1 –Dwelling rented (in %) among the total dwelling occupied, year 2003



Source: Censis et al. (2007) and Housing Statistics in EU 2004

In 2003 about 4.5% of the total dwellings, i.e. 21% of the rented dwellings, are social housing; these percentages are very low if compared, e.g., to Netherland (with 35% of total dwellings, i.e. the 77% of rented dwelling, for social housing) and UK (with 21% of total dwellings, i.e. the 68% of rented dwelling, for social housing). (see National Agency for Enterprise and Housing (2004)). No substantial reforms have been introduced yet to improve the situation.

Fig. 2 – Percentage of social housing among all the dwelling occupied, year 2003



Source: Censis et al. (2007)

Cash-subsidies (housing allowances)

In 1998 the Italian government introduced a national social contribution for the rent ("Fondo nazionale per l'accesso alle abitazioni in locazione" (law 431/1998)), in aid of those households with economic difficulties who have to pay a private market rent; the allocation of such national contribution among the Regions is decided by the Ministry of Infrastructure and Transports ("Ministero delle Infrastrutture e Trasporti"), in accordance with the previous year's needs of each Region.

Municipalities, then, have to manage the social contribution, both by ranking the households that satisfy the minima criteria established by the Ministry, and by respecting the resources allocated.

In the years 2003 and 2004, in particular, the total amount of such national social contribution was, respectively, about 246 million Euro and about 248 million Euro (source: "Ministero delle Infrastrutture e Trasporti", www.infrastrutturetrasporti.it).

Although minima requirements are established by the central government, the conditions under which a household can benefit from the national social contribution for the rent vary with the municipalities. In general, households should possess the following characteristics: low household income and/or wealth, high number of components, living in the municipality that provide the contributions, being not owner or rent-free in usufruct of a dwelling the could satisfy the household's needs, having a regular rent contract, presence of an old or mono-parental householder, presence of an handicap member in the household.

Tax deductibility of rents

In 2003 and 2004 a renter could ask for a tax allowance from IRPEF under two particular circumstances; the first condition required that the dwelling was the main residence of the renter, that the rent had been stipulated under a conventional contract (law no. 431/1998), that the owner was not a public institution and that the income of the renter did not exceed 30987.41 Euro. In such cases, the tax allowance was equal to 495.80 Euro, if total income was less than 15493.71 Euro, and to 247.90 Euro, if total income was between 15493.71 Euro and 30987.41 Euro. The second possibility to get such tax allowance required that the renter moved the residence, because of his job, to the city of the dwelling, which had to be 100 km further from the original city of the renter; he could benefit from such allowance only for the first three years after the relocation. The allowance was equal to 991.60 Euro, if the total income was less than 15493.71 Euro, and equal to 495.80 Euro, if the total income was between 15493.71 Euro and 30987.41 Euro.

Regional / local taxes

In Italy, no local taxes have to be paid by the renters.

4. Structure of the Italian population by tenure status

The aim of this section is to provide an overview of the Italian situation, in the years of interest 2003 and 2004, in terms of tenure status conditions of the dwellings and other socio-economics characteristics, such as income, age, years of occupancy, geographical area.

As reported in Ball (2005), in Italy "home ownership is high and increasing, with currently more than four-fifths of residents owning their home. [3] This is matched by a declining share for the private rental market, and there is very little social housing. The social groups that have above average share of homeownership contain those with a mix of three criteria: older head of household (50+), high educational achievement and medium to high incomes. Renting is greatest among lower income groups. Spatially, homeownership shares are highest in the South and in the communities of less than 20,000 people."

In this section, we show that results very similar to the ones in Ball (2005) emerge also from both EU-SILC 2004 and SHIW04 data set.

Tables 1 and 2 describe the distribution of the Italian population, by housing tenure and by quintiles.

Tab. 1: Population distribution by housing tenure, in Italy in 2004

	Population share	
Tenure status	**EU-SILC 2004**	**SHIW04**
Owner occupiers	69.86	69.30
Thereof		
outright owner	55.68	59.06
with outstanding mortgage	14.18	10.24
Tenants	30.1	30.70
Thereof		
in private market (non-subsidized)	12.67	8.94
rent-subsidized due to living in social housing	5.51	5.76
rent-subsidized by landlord (eg. family, employer)		6.17
rent-free	11.96	9.83
Total	100.00	100.00

Source: SHIW04 and EU-SILC 2004

From Table 1 we note that the majority of the Italians live in owner-occupied housing (almost 70%) and most of them without mortgage. Observe that the results from the two data sets are quite similar, although few discrepancies. In EU-SILC, e.g., the percentage of owners on mortgage is 4 percentage points higher than in SHIW04 and the partition of

[3] In Ball (2005), the rent-free and, in particular, the occupiers in usufruct are considered as owners of their main residence.

tenants is quite different. This is mainly due to the different information on tenure status available in the two data sets; see Section 2.

Among the tenants, about a third has a rent at market value, another third is rent-free and, only for SHIW04, the remainder is equally split into social tenants and tenants subsidized by landlords. It is worth underlying the low proportion of market renters in Italy, equal to the 9% (according to SHIW04) and to the 13% (according to EU-SILC04) of the entire population.

Tab.2: Distribution (in %) of tenure status, by quintile, EU-SILC 2004

Quintile	Owner-occupiers			Tenants			
	Total	own outright	on mort-gage	Total	rent-free	reduced-rent	market renter
1 (bottom)	15.78	17.50	9.02	29.79	28.09	31.73	30.56
2	18.78	18.93	18.18	22.83	23.60	23.74	21.72
3	20.70	20.33	21.64	18.65	19.28	16.84	18.85
4	21.77	21.20	24.02	15.87	15.70	16.54	15.75
5 (top)	23.07	22.04	27.14	12.84	13.33	11.15	13.12
All	100	100	100	100	100	100	100

Source: EU-SILC 2004

In Table 2, the population of each tenure-group is split by quintile;[4] we note that, as income increases, the proportion of owners (both outright, but especially on mortgage) increases and the proportion of tenants (rent-free, at market price and not) reduces. In particular, more than half of the tenants occupies the first two lowest quintiles, while, at the opposite, more than half of the owners on mortgage occupies the two highest income quintiles.

The principal factors underlying the huge percentage of homeownership, which has seen a fast increase in the last years, are well synthesized in Ball (2005); firstly, “financial and economic conditions have shifted towards purchase, as mortgage borrowing is now affordable within the Euro zone, where the nominal interests expected to remain quite moderate in the future”. Moreover, “the fiscal system is biased towards homeownership, with mortgage interests’ relief, no tax on imputed rent and substantial capital gains tax exemption for homeowners”. Finally, “new housing supply is almost exclusively for homeownership rather than for renting”.

[4] Note that, for the remaining analysis of this section, we report results only from EU-SILC 2004; however, similar results can be obtained from the data set SHIW04.

In Istat (2006), moreover, it comes out that the size of municipality, the disposable income, the type of household and the age of the householder are the main factors that influence a household to choose for rent instead of ownership.

Such characteristics of the Italian population in 2004 are illustrated in Figures 3, 4, 5 and 6, referring to the year 2004.

Fig. 3: Distribution of population by tenure status and average age of householder, EU-SILC 2004

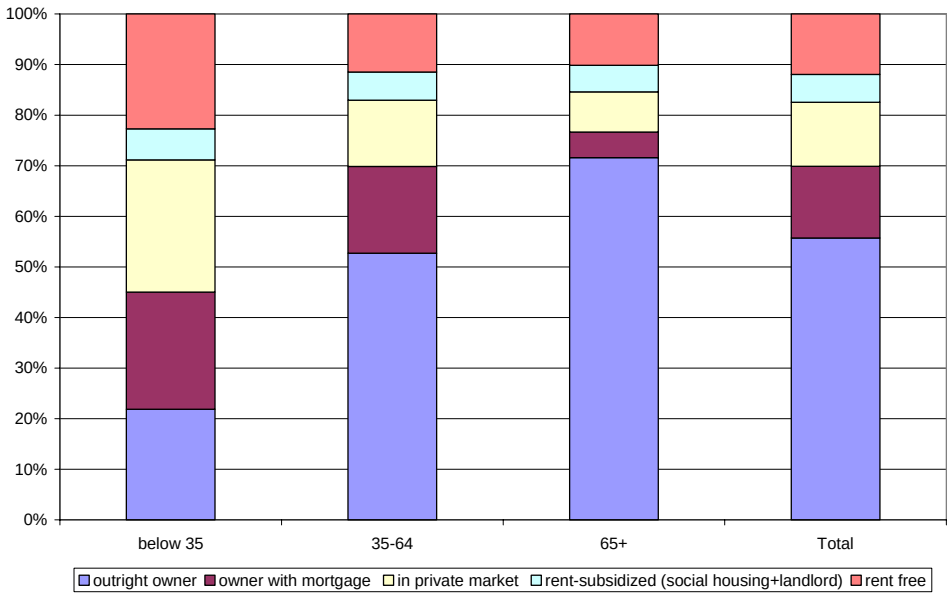
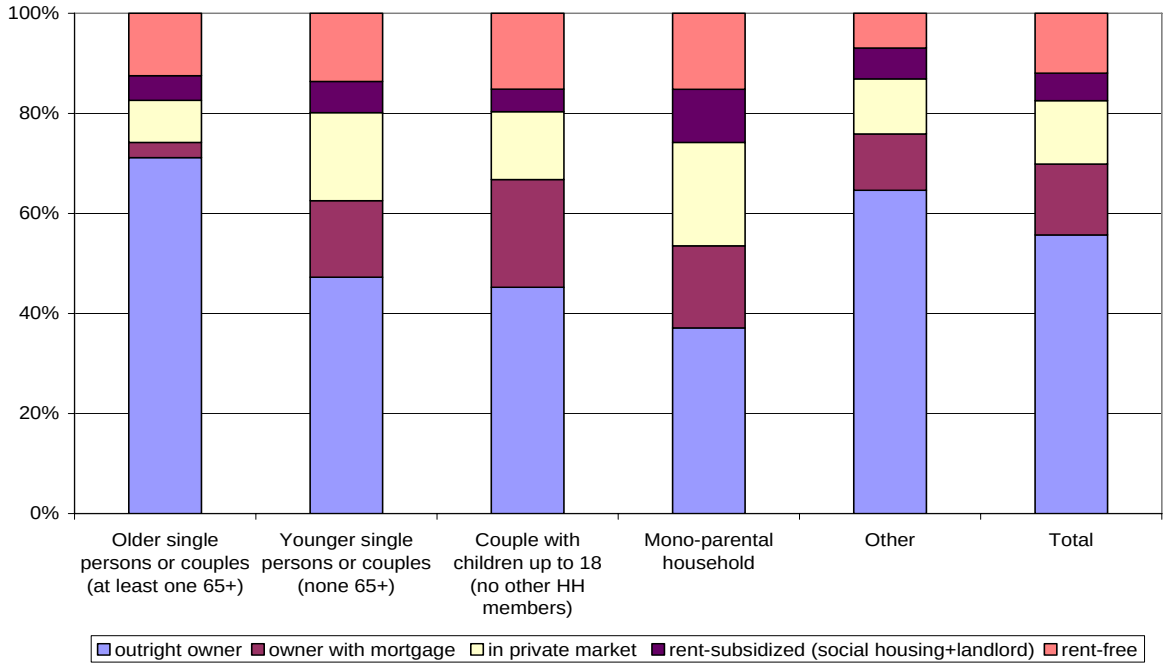


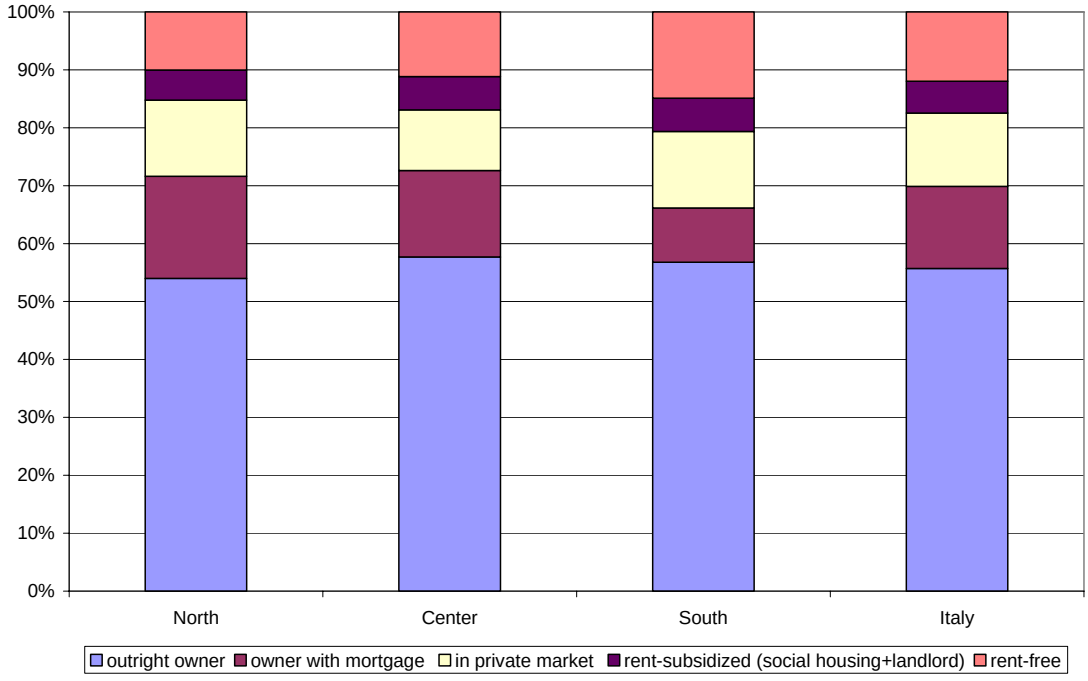
Figure 3 shows the distribution (in %) of the population, by tenure status and age of the householder. We can observe that the percentage of outright owners increases with age, with 20% of householders younger than 35 years old, against 70% of householders aged more than 65 years old; the proportions of owners with mortgage and renters in private market, instead, decreases with the age of the householder. The households with the youngest head (below 35 years) are quite equally split into outright owners, owners on mortgage, market and rent-free tenants, while the middle age householders are for two third owners (mainly outright) and a third tenants (mainly rent free). In particular, the majority of rent-free tenants is young-middle aged householders, probably living in dwellings, whose owner is the family of origin. Age, finally, does not discriminate households for being subsidized renters.

Fig. 4: Distribution of population by tenure status and type of household, EU-SILC 2004



The relation between type of household and tenure status is, instead, shown in Figure 4, revealing that 70% of the old couples or singles are outright owners and, among the tenants, are mainly rent free; the young couples or singles are mostly owners (outright) and market tenants; the couples with young children are at most owners and, among the tenants, mainly rent free. Rent-free tenants are equally distributed among different household types. Moreover, the youngest singles or couples and mono-parental households are more likely to be market tenants; this is in accordance with the result s in ISTAT (2006).

Fig. 5: Distribution of population by tenure status and geographical area, EU-SILC 2004



From Figure 5 we observe that the outright owners are a little more concentrated in the Center of Italy, while most of the owners with mortgage live in the North; rent-free and market tenants are mostly in the South, while the subsidized by renters in the North (our results are coherent with the findings in other studies, e.g. Cipolletta et al., 2006, ISTAT, 2006).

Fig. 6: Distribution of population by tenure status and demographic size of the municipality, EU-SILC 2004

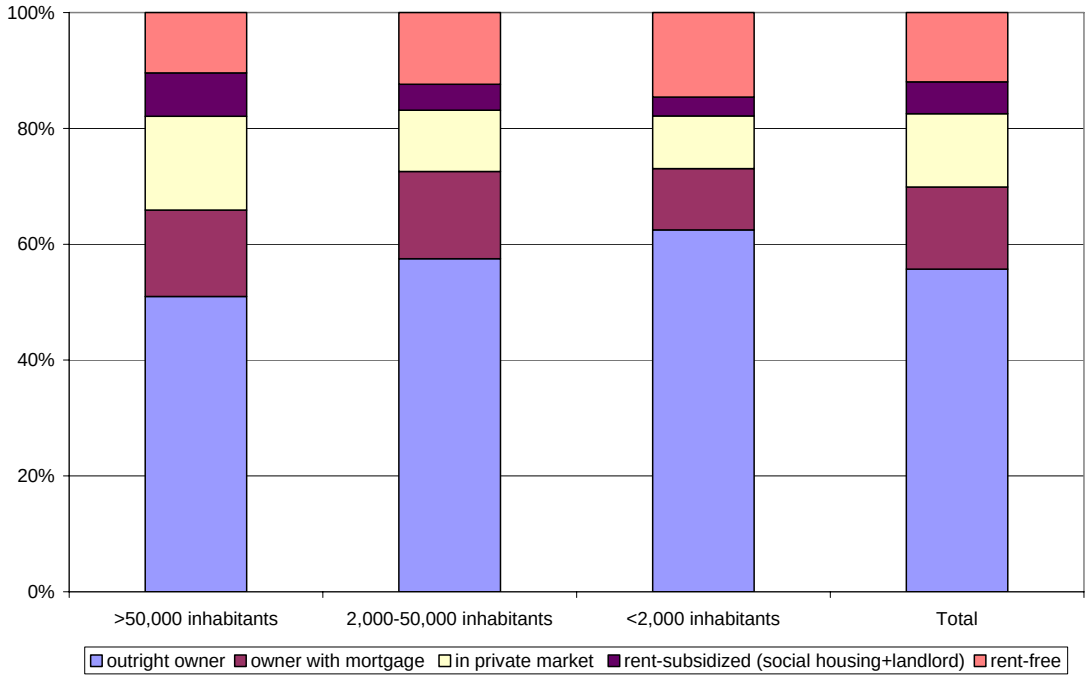


Figure 6 reveals, finally, an inverse relationship between demographic size of the municipality and home-ownership, as the percentage of outright owners increases moving from big to small cities. The same trend holds for the rent-free tenants, while the opposite happens for the private market renters, owners on mortgage and the subsidized tenants.

In general, tenants are mainly concentrated in the biggest cities (almost 50% of the inhabitants) and less in the small village (in municipalities with maximum 2,000 inhabitants).

Before concluding this section, it seems interesting to compare the different tenure status in terms of conditions of the dwelling. Table 4 shows no differences, between owners and tenants, in terms of presence of the most common facilities, such as bathroom, shower and hot water. Tenants' dwellings are, instead, in worse conditions than owners' ones; higher percentage of tenants, if compared to owners, have dwellings with damaged roof, humidity, not enough light and live in areas with pollution, noise and criminality. A higher proportion of owners, instead, has balcony, garden and heating in their dwelling.

Tab.4: Households (in %) with dwelling endowed by some characteristics, by tenure status

	bathroom	shower	balcony	Garden	hot water	bad roof
Owner occupiers	99.58	99.524	85.18	44.64	99.33	8.58
thereof						
outright owner	99.55	99.43	84.84	45.07	99.21	8.90
with outstanding mortgage	99.70	99.89	86.50	42.96	99.79	7.32
Tenants	99.41	98.64	76.48	24.85	98.52	15.46
thereof						
in private market (non-subsidized)	99.33	98.88	77.65	14.04	98.68	18.31
rent-subsidized (social housing + landlord)	99.38	99.52	73.11	6.99	94.42	25.05
rent-free	99.40	98.56	75.05	42.22	98.62	11.51
Total	99.53	99.26	82.56	38.68	99.08	10.65

	Humidity	no bright	pollution	Noise	criminality	heating
Owner occupiers	16.87	7.31	21.24	24.21	12.85	92.21
thereof						
outright owner	17.32	7.72	20.88	24.31	12.73	91.59
with outstanding mortgage	15.12	5.67	22.65	23.81	13.34	94.67
Tenants	25.44	14.7	25.28	30.58	19.41	83.09
thereof						
in private market (non-subsidized)	26.05	16.82	27.63	31.80	21.72	80.56
rent-subsidized (social housing + landlord)	39.39	28.85	27.65	45.84	22.14	62.25
rent-free	23.46	11.63	20.43	25.63	13.20	86.98
Total	19.45	9.53	22.46	26.13	14.83	89.46

Source: EU-SILC 2004

Tab. 5: Characteristics of dwellings and of households

	Age of head (mean)	Occupancy (mean, in years)	square meters (mean)	Number of rooms (mean)
Owner occupiers	57.62	19.83	106.97	3.72
thereof				
outright owner	60.36	22.60	106.75	3.74
with outstanding mortgage	44.97	8.93	107.82	3.65
Tenants	52.09	13.91	84.34	3.10
thereof				
in private market (non-subsidized)	49.41	10.94	79.47	2.95
rent-subsidized (social housing + landlord)	55.11	16.17	79.28	2.91
rent-free	53.51	16.19	91.56	3.24
Total	55.85	18.05	100.15	3.53

Source: EU-SILC 2004

Table 5 shows the average age of the head of the households, grouped by tenure status; the age mean of the householder is lower for tenants than for owners, the youngest are the owners on mortgage, the market tenants and the rent-free tenants.

Looking at the duration of occupancy, the owners have been living in their accommodation for longer time than the tenants have. The average number of years of occupancy is lower for the owners on mortgage than for the outright owners; among the tenants, the social and the rent-free tenants are the ones who have been living longer in their

dwelling, while the market tenants are the youngest occupiers. The last two columns show that on average the dwellings of owners and rent-free are bigger, both in terms of square meters and in terms of numbers of rooms, than those of tenants are.

Finally, we shortly focus on tenants' situation by comparing the rent costs for different geographical areas and different municipality's size.

Tab. 3 – Distribution (in %) of monthly rent, by degree of urbanization and by geographical area

	Rent (Euro)				
	<200	201-300	301-400	>401	Total
Degree of urbanization					
>50,000 inhabitants	30.8	21.0	19.8	28.4	100.0
2,000-50,000 inhabitants	33.9	22.5	21.9	21.8	100.0
>2,000 inhabitants	53.0	25.1	14.7	7.2	100.0
Area					
North of Italy	23.9	20.6	23.4	32.1	100.0
Centre of Italy	28.8	18.1	20.1	33.0	100.0
South of Italy	50.7	25.6	15.2	8.6	100.0
Total	34.6	22.0	19.8	23.6	100.0

Source: EU-SILC 2004

Table 3 shows that the highest levels of rent are concentrated in the big and intermediate cities, while more than half of the lowest rents are paid in the smallest municipalities; moreover, half of the rents paid in the South of Italy are lower than 200 Euro per month, while more than one third of the rents in the North and in the Centre of Italy exceed 400 Euro monthly.

5. Three alternative methods to measure imputed rent

After describing, in the previous sections, both the national housing policies and the characteristics of the tenure status, we start in what follows the analysis of the distributional impact of the imputed rent.

The first step of our analysis consists of calculating the gross IR. With the SHIW04 data set, three alternative methods for determining the imputed rent can be implemented for the Italian case: the "opportunity cost" method, the "capital market" method and the "self-assessment" method; the EU-SILC 2004 data set allows, instead, only for two of these three methods, the "opportunity cost" and for the "self-assessment" approaches. For a wider discussion on the first two approaches, see Frick and Grabka (2003).

5.1 The opportunity cost method

The first method (also labelled as “rental equivalence” method) defines and calculates IR as the opportunity cost of renting a house in a non-subsidized market. Therefore, the market tenants do not benefit from IR, while all the other individuals or households are assigned a value equal to the opportunity cost of renting their dwelling at market price.

According to such method, the imputed rent is estimated with a linear regression of the logarithmic transformation of the rent per square meter (not including costs for heating, condominium charges and other sundry expenses) paid by the market renters; as explicative variables (or Right Hand Side (RHS) variables) we employ information both on the characteristics of the dwelling, such as the year of construction, occupancy in year, community size, city center, geographic area of residency (North, Center, South and Islands. For the latter, we often refer to them as South but this partition includes always the Islands as well), basic amenities, and on some socio-economic characteristics of the householder, such as disposable income (for details, see Appendix D). A linear regression is implemented including a control for clustering effects at regional level.

An estimation of the gross value of the dwelling at market prices can be therefore obtained for owners, subsidized tenants and rent-free tenants; more in detail, a random error term, from the true distribution of the market renters, is added to the estimated logarithmic rent per square meter, then the antilogarithm of this quantity is calculated. An annual **gross IR** is finally obtained, by multiplying the estimated rent by the size of the dwelling and by 12 (number of months per year).

The main advantage of such method is to allow the definition of IR for all the potential beneficiaries, i.e. owners and tenants paying no or below market rent. The method becomes, at the same time, less reliable in case of countries characterized by a small private market, since the regression would be based on few observations; in the Italian case, as we will discuss later, about 9%, according to SHIW, and about 13%, according to EU-SILC, of individuals are market renters and the quality of the estimation, obtained from the opportunity cost approach, will be, therefore, not optimal.

5.2 The capital-market method

An alternative way to estimate the imputed rent is based on a subjective evaluation from the occupiers on the market value of their dwelling. In the SHIW04 questionnaire, all the households (owners and tenants) are asked to evaluate the gross market value of the dwelling; the original question is: “In your opinion, what price could you ask for the dwelling in which you live (unoccupied)?”.

The idea is that, according to equity principles, the rate of return that can be obtained by investing money in the capital market should be the same as the return of investing money in real estate.

The IR is defined, therefore, as the gain obtained by investing in the housing market. For this reason, we believe that such method can be applied only to owner-occupiers, since the tenants do not invest money in buying their house. Therefore, even if we have information for all the individuals, we apply the capital-market method only to owner-occupiers.

We obtain the **gross IR**, according to this method, by multiplying the subjective value of the housing unit, net from outstanding mortgage, by the real interest rate prevailing in the market. For sensitivity analysis, different values of interest rate can be considered, e.g. 2%, 3% and 4%. Two are the main drawbacks of such approach: it can be applied only to owner-occupiers and it is subjective, since it relies on self-evaluation of the dwelling.

Note, moreover, that such approach cannot be implemented with EU-SILC 2004, since no information on the market value of the dwelling are asked to the households.

5.3 The self-assessment method

The third method is based on subjective evaluations as was the case for the one previously presented. In particular, occupiers are asked to estimate a monthly rent, without heating costs, for their house. In SHIW04 this kind of information is available only for owner and rent-free tenants, who are asked the following question: “Assuming you wanted to rent this dwelling, what monthly rent do you think could be charged?”. Therefore, such method is applied in SHIW04 only to owners and rent-free tenants.

In the EU-SILC 2004 household questionnaire, also reduced tenants are asked to provide a subjective evaluation of their dwelling’s rent at market price; in particular, owners and rent-free occupiers are asked the following question: “Assuming you wanted to rent this dwelling, what monthly rent do you think could be charged, without costs of heating, condominium charges and sundry expenses?”, while reduced tenants are asked: “Assuming you rented this dwelling at the market price, what monthly rent do you think could be charged, without costs of heating, condominium charges and sundry expenses?”.

In both data sets, the measure of **gross IR** is defined simply as the subjective rent assigned from the occupiers.

5.4 The net imputed rent

After obtaining the gross IR with one of the three previous presented methods, in order to arrive to an objective value it is necessary to deduct from it all the costs related to the main

residence, which are specific for owners, rent-free and subsidized tenants, but not for market renters; in this way we will obtain a net measure of imputed rent.

Four are the main types of costs that we consider in the analysis:

- property taxes;
- interests on mortgage;
- owner-specific maintenance and operating costs;
- rent actually paid by reduced tenants (social tenants and reduced by landlord tenants).

In the following we discuss the problems encountered in dealing with such costs and the solutions here proposed.

- Estate City Tax (ICI): direct information on the amount of ICI paid by each household for the main residence is not available neither in the SHIW04 nor in EU-SILC 2004[5] data set; we use, therefore, an external source (Anci-CNC (2005)), which provides information on the total amount of ICI collected by each of the 20 Italian regions during the year 2003 and 2004. The report of Anci-CNC (2005) estimates that about 27 % of total ICI collected by each region is due to the principal dwelling; hence, we use as proxy of the amount of ICI paid by each household the following:

$$ICI_{HH} = \frac{ICI_{RE(HH)} \times 0.27}{SM_{RE(HH)}} \times SM_{HH},$$

where ICI_{HH} is the ICI paid by the household *HH*, $ICI_{RE(HH)}$ is the amount of ICI collected by the region in which the household *HH* lives, $SM_{RE(HH)}$ is the sum of the square meters of all the households in such region and M_{HH} are the square meters of the household *HH* dwelling. Table 6 synthesizes the information on the regional ICI, as provided by Anci-CNC (2005), relative to the years 2003, for EU-SILC 2004, and 2004, for SHIW04.

[5] To be precise, the Italian version of EU-SILC 2004 does include information on the amount of ICI paid by each household for the totality of the real estate owned; we are, therefore, not able to distinguish the amount of ICI concerning only the main residence.

Tab. 6: ICI (Millions of euro) amount per regions, years 2003-2004

REGION	ICI 2003	ICI 2004	REGION	ICI 2003	ICI 2004
Piemonte	847	868	Marche	217	218
Valle d'Aosta	30	32	Lazio	1334	1331
Lombardia	1715	1746	Abruzzo	167	180
Liguria	453	453	Molise	38	40
Trentino- Alto Adige	155	157	Campania	588	597
Veneto	789	813	Puglia	474	481
Friuli-Venezia Giulia	207	215	Basilicata	45	46
Emilia Romagna	974	1000	Calabria	135	140
Toscana	774	782	Sicilia	437	445
Umbria	121	121	Sardegna	183	182
North-West	3044	3098	Center	2613	2451
NorthEast	2125	2185	South and Islands	1900	2111
Italy	9682	9849			

source: Elaboration of "Centro Studi Sintesi" on data set Anci-CNC and Istat.

- Mortgage interests: In SHIW04, there is no specific information on the amount of mortgage interests paid by the household during the year 2004; information on the interest rate and the outstanding debt are, instead, available. Therefore, assuming an amortization schedule with constant rate, we estimate the annual cost of mortgage (interest amount) as the product of the annual interest rate and of the outstanding mortgage at the end of the survey year.

  In EU-SILC 2004, instead, households are directly asked for the annual expenses for interests paid in the year 2003; we use therefore directly such information.

  Moreover, for supporting and promoting the owner-occupancy, the Italian fiscal system admits an allowance of the 19% of the mortgage interests from the personal income tax, up to a maximum allowance of 686.89 Euro. The amount of such allowance is added to the gross IR, incrementing the benefits of homeownership.

- Since no external information are available, to our knowledge, on the average annual owner-specific maintenance and operating costs in Italy, we derive them directly from the data, both for SHIW04 and for EU-SILC 2004. Such costs are obtained, with SHIW04 data set, by dividing the annual amount of extraordinary expenses for the principal residence (due to expansion, improvement, renovation, etc.), spent by all the owners (variable “TMANSTRA” in SHIW04), to the sum of the square meters of all the owners. We obtain a lump sum equal to approximately 0.88 Euro as a proxy of the owner-specific maintenance costs per square meter per month.[6]

[6] We divide the total amount of expenses by all the owners, and not only by the owners who actually have the expenses during the year 2004, in order to split such extraordinary costs, typically not annual, across the years.

The same procedure is applied with EU-SILC 2004, using for each owner occupied household both ordinary (variable “lavrip”) and extraordinary (variable “ristrut”) maintenance housing costs; we come out with a lump sum per square meter per month approximately equal to 0.94 Euro.

Different costs have to be deducted from the gross measure for obtaining a net IR measure, according to the type of tenure status.

The costs considered for the owners are: the property tax, the mortgage interests and the owner-specific maintenance and operating costs.

Therefore, the net imputed rent for the owners is obtained by subtracting to the gross IR the estimated property tax ICI, the mortgage interest (added by the 19% of the mortgage interest)[7] and the lump sum of the maintenance costs.

For rent-free households, the only cost assumed is the local property tax ICI that has to be paid by rent-free tenants with contract in usufruct.

Finally, the net IR of the subsidized renters (both social renters and tenants subsidized by landlord) is obtained by subtracting to the gross IR the actual rent paid; no other costs are assumed for this group.

For each group of tenure status, in case of costs exceeding the estimated gross IR, the net IR is assigned a value of zero (i.e. no negative IR is assumed).

5.5. Preferred versus alternative approach

The availability of two distinct data sets and three alternative methods for calculating imputed rent provides a large quantity of results, which are all quite consistent to each other. However, in order to keep this report adequately short, we decided to present in what follows the results from one sole approach, common to the both data set. The other results are contained in the Appendix.

Our preferred approach is the opportunity cost approach since it can be applied to both the data sets of analysis, differently than the capital market approach; furthermore, it is an “objective” method, as it does not depend on the subjective evaluation of rent by the household but rather on robust econometric techniques. As expected, the chosen approach gives more similar results between the two data sets than the subjective approach given its more objective nature.

In the next section we present results form the opportunity cost approach both for SHIW04 and for EU-SILC 2004, while analysis with the alternative approaches are summarized in Appendices A and B. The results on distributional effects of IR are analogous

[7] Note that no allowance of the interest rate is applied for the capital market approach.

among the different approaches and data sets; what changes is the level of IR, which is in general higher with the two subjective approaches, capital market and self-assessment.

6. Results from the empirical analysis with the opportunity cost approach

In the following, we illustrate and discuss several tables and figures summarizing the effects of IR both on income distribution, in terms of incidence and relevance, and on poverty and inequality. In particular, we partition the population into several groups, according to different socio-economic characteristics, and study the impact of IR on each of them.

The main idea of all these tables is to contrast the results obtained from the baseline model (based on the cash-income) with those obtained by adding IR to cash income, according to the opportunity cost approach. Results from the two data sets are compared. The unit of analysis is the individual; both disposable cash income and disposable non-cash income are transformed into equivalent income by applying the modified OECD equivalence scale.[8]

IR incidence

The incidence of IR over the entire Italian population for the year 2003 with EU-SILC and the year 2004 with SHIW04 can be summarized by Table 7.

Table 7: Housing tenure and Income advantages from IR by tenure status

	EU-SILC 2004		**SHIW04**	
	Share with IR=0	**Share with IR>0**	**Share with IR=0**	**Share with IR>0**
Owner occupiers	4.25	95.75	1.99	98.01
Thereof				
outright owner	5.30	94.70	2.33	97.67
With outstanding mortgage	0.16	99.84	0.00	100.00
Tenants	45.69	54.31	39.56	60.44
Thereof				
in private market (non-subsidized)	100.00	0.00	100.00	0.00
Rent-subsidized due to living in social housing	20.05	79.95	9.02	90.98
Rent-subsidized by landlord (eg. family, employer)			43.53	56.47
Rent-free	0.00	100.00	0.00	100.00
Total	16.74	83.26	13.53	86.47

Source: EU-SILC 2004, SHIW 2004

[8] The modified OECD equivalence scale gives weight equal to 1 to the householder, equal to 0.5 to all the other adults and 0.3 to the children, i.e. members aged 14 or less.

According to SHIW04, almost all the owners (98.01%) and, in particular, the owners with outstanding mortgage with a higher percentage than the outright owners benefit from the imputed rent. Among the tenants, all the rent-free, 90.98% of tenants in social housing and 56.47% of subsidized renters by landlord benefit from IR, while, totally, the 60.44% of the tenants has positive IR (owing to the presence of market tenants, who do not benefit from IR at all). In general, such approach asserts that a very high percentage (86.47%) of the entire Italian population benefit from imputed rent.

According to the EU-SILC 2004, the percentage of beneficiaries is overall slightly lower than with SHIW04; that is, 95.75% of the total owners, i.e. 94.70% of the outright owners and almost all the outstanding owners have a positive IR. Lower than in SHIW04, 54.31% of tenants benefit from IR. Totally, 83.26 % of the entire population in 2003 benefit from IR.

The comparison, for each income quintile, of the percentage of effective beneficiaries from IR with the proportion of potential beneficiaries is of interest. Table 8 and Table 9 show, respectively, the results for EU-SILC 2004 and SHIW04. From the tables of potential beneficiaries, we can observe the structure of the Italian population, analogously to what discussed in Section 4; the share of owners increases with income, both for outright owners and for outstanding owners; the opposite trend holds for tenants, who decrease in proportion as income increases. Looking at the entire population, the percentage of potential beneficiaries increases with income.

Tab.8: Effective and potential beneficiaries from IR (%), EU-SILC 2004

Quintile	**Population share of beneficiaries (%)**						
	Total	**Owner-occupiers**			**Tenants**		
		Total	**own outright**	**on mortgage**	**Total**	**rent-free**	**reduced-rent**
1 (bottom)	74.6	50.6	44.3	6.3	24.0	16.8	7.2
2	82.0	62.4	49.5	12.9	19.6	14.1	5.5
3	84.2	69.2	53.8	15.3	15.1	11.5	3.6
4	86.7	73.7	56.7	17.0	13.0	9.4	3.6
5 (top)	88.8	78.6	59.4	19.2	10.2	8.0	2.3
All	83.3	66.9	52.7	14.2	16.4	12.0	4.4
Quintile	**% Potential beneficiaries**						
	Total	**Owner-occupiers**			**Tenants**		
		Total	**own outright**	**on mortgage**	**Total**	**rent-free**	**reduced-rent**
1 (bottom)	80.7	55.1	48.7	6.4	25.5	16.8	8.7
2	86.2	65.6	52.7	12.9	20.7	14.1	6.5
3	88.1	71.9	56.6	15.3	16.2	11.5	4.6
4	90.0	76.1	59.0	17.0	14.0	9.4	4.6
5 (top)	91.7	80.6	61.4	19.3	11.1	8.0	3.1
All	87.3	69.9	55.7	14.2	17.5	12.0	5.5

Source: EU-SILC 2004

Tab.9: Effective and potential beneficiaries from IR (%), SHIW04

Quintile	Population share of beneficiaries (%)						
	Total	Owner-occupiers			Tenants		
		Total	own outright	on mort-gage	Total	rent-free	reduced-rent
1 (bottom)	81.5	52.6	48.1	4.6	28.9	14.7	14.3
2	84.3	62.4	54.3	8.1	21.9	11.2	10.8
3	89.1	72.6	62.5	10.1	16.5	8.2	8.3
4	86.9	71.6	59.1	12.6	15.2	9.5	5.8
5 (top)	90.5	80.3	64.5	15.8	10.2	5.6	4.6
All	86.5	67.9	57.7	10.2	18.6	9.8	8.7
Quintile	**% Potential beneficiaries**						
	Total	**Owner-occupiers**			**Tenants**		
		Total	**own outright**	**on mort-gage**	**Total**	**rent-free**	**reduced-rent**
1 (bottom)	88.3	54.4	49.8	4.6	33.9	14.6	19.2
2	89.4	64.0	55.8	8.1	25.4	11.2	14.3
3	93.6	74.0	63.9	10.1	19.6	8.2	11.4
4	91.3	72.9	60.3	12.6	18.4	9.5	8.9
5 (top)	92.7	81.3	65.4	15.8	11.4	5.6	5.8
All	91.1	69.3	59.1	10.2	21.8	9.8	11.9

Source: SHIW04

Because of such a structure, the percentage of effective beneficiaries increases with income, for the owners, and reduces with income, for the tenants, while the effect of IR on the overall population increases with income; this holds for both data sets. In SHIW04 the overall percentage of beneficiaries is higher than in EU-SILC 2004 in all the subgroups except the owners with mortgage and the rent-free.

IR relevance on the overall population

If we add IR to the cash-income of each individual, the overall disposable income obviously increases; the degree of such increment, i.e. the IR relevance, is described in Tables 10 and 11.

Table 10 compares the income share, by quintile, of the baseline distribution (based on cash income) with the distribution of income including IR. The share of income among the quintiles before IR (second column of Table 10) is very similar in the two different data sets.

Tab.10: Income share (in %), by quintile

Income Share								
Quintile	**EU-SILC 2004**							
	Baseline in %	**Total**	**Owner-occupiers**			**Tenants**		
			Total	**own outright**	**on mort-gage**	**Total**	**rent-free**	**reduced-rent**
1 (bottom)	7.4	7.7	7.4	7.5	7.4	7.6	7.6	7.5
2	12.7	12.9	12.8	12.8	12.7	12.9	12.8	12.8
3	17.1	17.2	17.2	17.2	17.1	17.2	17.2	17.1
4	22.6	22.6	22.7	22.7	22.6	22.6	22.6	22.6
5 (top)	40.1	39.5	39.9	39.9	40.2	39.8	39.9	40.0
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Quintile	**SHIW04**							
	Baseline in %	**Total**	**Owner-occupiers**			**Tenants**		
			Total	**own outright**	**on mort-gage**	**Total**	**rent-free**	**reduced-rent**
1 (bottom)	7.2	7.4	7.1	7.2	7.2	7.4	7.3	7.3
2	12.2	12.5	12.2	12.3	12.2	12.4	12.4	12.3
3	16.9	17.2	17.2	17.1	16.9	17.0	16.9	16.9
4	22.6	22.7	22.7	22.7	22.6	22.6	22.6	22.6
5 (top)	41.1	40.2	40.7	40.7	41.2	40.6	40.9	40.9
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: EU-SILC 2004, SHIW04

According to both data sets, we observe a general increase in the income share for the first quintiles and a reduction for the highest quintile. Therefore, from Table 10 we would expect an overall reduction in inequality, when adding IR to the cash income distribution.

Looking at the subgroups defined by tenure status, in both datasets, income share decreases in the highest quintile when IR is added only to the outright owners, while it increases when adding IR to the owners on mortgage. Moreover, the addition of IR to the sole tenants increases the income share in the lowest quintiles (where most of the tenants are concentrated) and decreases the income share in the highest quintiles (where few tenants are present).

Tab. 11: Increase (in %) of disposable income, by quintile, EU-SILC 2004 and SHIW04

% Increase in disposable income								
Quintile	**EU-SILC 2004**							
		Total	**Owner-occupiers**			**Tenants**		
	Baseline (EUR) mean		**Owner-occupiers**	**own outright**	**on mort-gage**	**Tenants**	**rent-free**	**reduced-rent**
1 (bottom)	5548	18.7	11.4	10.1	1.3	7.3	5.8	1.4
2	9493	13.3	9.4	7.7	1.7	3.9	3.1	0.8
3	12755	11.6	8.9	7.2	1.7	2.7	2.3	0.5
4	16854	10.7	8.8	6.9	1.9	1.9	1.6	0.3
5 (top)	29911	7.7	6.7	5.2	1.5	1.1	0.9	0.1
All	14910	10.6	8.2	6.6	1.6	2.4	2.0	0.4

Quintile	**SHIW04**							
		Total	**Owner-occupiers**			**Tenants**		
	Baseline (EUR) mean		**Total**	**own outright**	**on mort-gage**	**Total**	**rent-free**	**reduced-rent**
1 (bottom)	5027	17.6	10.8	10.1	0.7	6.8	4.4	2.4
2	8473	14.8	10.6	9.7	0.9	4.2	2.7	1.5
3	11737	14.0	11.5	10.2	1.2	2.5	1.7	0.8
4	15607	11.8	9.6	8.2	1.4	2.2	1.6	0.5
5 (top)	27861	8.3	7.3	6.2	1.1	0.9	0.7	0.2
All	13739	11.5	9.2	8.1	1.1	2.3	1.6	0.7

Source: EU-SILC 2004, SHIW04

Table 11, on the other hand, shows the percentage increase in income due to IR, by quintile; according to both data sets, relevance of IR decreases with income. In particular, the outright owners benefit much more than the owners with mortgage do, while rent-free tenants are slightly more affected than subsidized renters.

In the two datasets, the increment in income due to IR increases with income for owners on mortgage and reduces with income for outright owners and for tenants. When IR is added to the overall population, in EU-SILC the increment in disposable income is higher in the lowest quintiles and smaller in the highest quintiles than in SHIW04.

Table 12 shows that the absolute equivalized IR transfer mean has a different trend than the relative IR transfer: it increases with income for owners and reduces with income for tenants. Therefore, we would expect an absolute inequality index to increase for owners and to reduce for tenants (see Table 15). The absolute IR transfer is greater for the totality of owners than for the totality of tenants and, within the groups, it is higher for the outright owners than for the owners with mortgage and for the rent-free than for the reduced renters. Comparing the two datasets, we observe that EU-SILC assigns higher IR average transfers to rent-free and to owners with mortgage and lower for all the other tenure-groups, if compared to SHIW04.

Tab. 12: Absolute increment in income due to imputed rent, by tenure status and quintile

Equivalized IR-transfer (EUR) mean							
Quintile	EU-SILC 2004						
	Total	Owner-occupiers			Tenants		
		Owner-occupiers	own outright	on mort-gage	Tenants	rent-free	reduced-rent
1 (bottom)	1036	634	562	71	402	325	78
2	1259	890	733	157	369	296	73
3	1479	1130	916	214	349	291	58
4	1808	1488	1165	323	320	262	58
5 (top)	2317	1990	1547	444	327	284	43
All	1580	1226	984	242	353	291	62

Quintile	SHIW04						
	Total	Owner-occupiers			Tenants		
		Total	own outright	on mort-gage	Total	rent-free	reduced-rent
1 (bottom)	902	554	518	35	349	228	121
2	1291	922	842	80	369	236	133
3	1684	1383	1234	149	301	209	92
4	1899	1551	1322	229	348	264	84
5 (top)	2431	2153	1830	323	278	217	61
All	1641	1312	1149	163	329	231	98

Source: EU-SILC 2004 and SHIW04

IR relevance by groups

In what follows we decompose the percentage increase of income by subgroups, partitioning the population according to different socio-economic characteristics; Tables 13 and 14 reveal, in particular, in which subgroups of the population IR has greater impact.

First, observe that the two data sets partition the Italian population according to different socio-economic characteristics, in a very similar way; in the column A of the Tables 13 and 14, indeed, the population shares of the different groups are indeed very similar.

Splitting the population by type of household, we observe that the highest increase in mean income is registered for the old singles or couples and the mono-parental families; the effect of IR on income distribution consists in no reranking of the groups' income positions, according both to SHIW04 dataset and to EU-SILC.

Among the groups based on the socio-economic conditions of the householder, the unemployed are the ones who benefit the most from IR, even if their population share is quite small; in this case no reranking in the income distribution occurs.

According to the education level, the least educated householders show the greatest increase in mean income with the SHIW04 dataset, while with EU-SILC the three lowest levels of education receive approximately the same increase in income due to IR; such a change does not modify the income position of the groups.

When the population is split into age levels, we observe, in both data sets, that the elderly are the most affected by IR, although no reranking occurs.

The geographical variable shows that the Center of Italy registers the highest IR relevance, but without reranking, with SHIW04. EU-SILC, instead, gives equal percentage of income's increase to the North and the Center of Italy.

Finally, looking at the tenure status, owners, if compared to tenants, receive higher increase in mean income, so that the relative difference in income positions reduces; among the owners, the outright owners have a higher increase, while among the tenants, in particular, the rent-free and tenants in social housing receive the highest increase in income. Nevertheless, no reranking can be observed, looking at Columns D and E of Tables 13 and 14; the poorest group remain the social tenants, in SHIW04, and the subsidized tenants, in EU-SILC, before and after the IR transfers, while the richest group remains the owners on mortgage.

Tab. 13: Relative income position and percentage changes by subgroups, EU-SILC 2004

Characteristic of household or household head	A	B	C	D	E	F
Household type						
Older single persons or couples (at least one 65+)	17.2	13916	15661	93	95	12.5
Younger single persons or couples (none 65+)	14.8	17524	19731	118	120	12.6
Couple with children up to 18 (no other HH members)	34.9	13845	15369	93	93	11.0
Mono-parental household	2.7	11789	13298	79	81	12.8
Other household types	30.4	15695	16945	105	103	8.0
Socioeconomic group of HH head						
Blue collar worker	20.9	12085	13392	81	81	10.8
White collar worker	18.6	17597	19462	118	118	10.6
Self-employed	17.3	17939	19642	120	119	9.5
Unemployed	3.2	8003	9096	54	55	13.7
Pensioner	29.1	15116	16734	101	101	10.7
Other	11.0	12415	13876	83	84	11.8
Educational level of HH head						
Tertiary education	9.1	23796	26064	160	158	9.5
Upper secondary education	28.8	16547	18350	111	111	10.9
Lower secondary education	30.4	13315	14735	89	89	10.7
Primary education or less	31.7	12398	13731	83	83	10.8
Age of HH member						
Below 25	24.8	13312	14677	89	89	10.3
25-64	55.9	15845	17485	106	106	10.3
Over 64	19.3	14251	15932	96	97	11.8
Area						
North	45.3	17090	19055	115	116	11.5
Center	19.3	16000	17769	107	108	11.1
south+islands	35.4	11527	12511	77	76	8.5
Housing tenure						
Tenants, total	30.1	12465	13638	84	83	9.4
Owners, total	69.9	15964	17720	107	107	11.0
Owner: own outright	55.68	15599	17367	105	105	11.3
Owner: on mortgage	14.18	17401	19107	117	116	9.8
Tenant: private market (non-subsidized)	12.15	12560	12560	84	76	0.0
Tenant: reduced-rent by landlord and social housing	5.51	11791	12913	79	78	9.5
Tenant: rent-free	11.96	12676	15112	85	92	19.2
ALL	100.0	14910	16490	100	100	10.6

Source: EU-SILC 2004

Columns:
A: Population share;
B and C : mean equivalent income (B: baseline income, C: income+IR);
D and E: income position (D: baseline income, E: income+IR);
F: % increase in mean equiv. Income.

Tab. 14: Relative income position and percentage changes by subgroups, SHIW04

Characteristic of household or household head	A	B	C	D	E	F
Household type						
Older single persons or couples (at least one 65+)	14.0	13142	15233	92	96	15.9
Younger single persons or couples (none 65+)	11.5	18978	21251	133	134	12.0
Couple with children up to 18 (no other HH members)	37.7	13335	14770	93	93	10.8
Mono-parental household	2.5	10900	12606	76	79	15.7
Other household types	34.3	14436	15905	101	100	10.2
Socioeconomic group of HH head						
Blue collar worker	19.5	11351	12625	80	79	11.2
White collar worker	22.2	17114	19055	120	120	11.3
Self-employed	13.8	20198	21890	142	138	8.4
Unemployed	3.6	6960	7889	49	50	13.3
Pensioner	30.8	13611	15450	95	97	13.5
Other	10.1	10180	11455	71	72	12.5
Educational level of HH head						
Tertiary education	8.2	24950	27251	175	171	9.2
Upper secondary education	31.9	16369	18234	115	115	11.4
Lower secondary education	32.4	12536	13957	88	88	11.3
Primary education or less	27.5	10686	12129	75	76	13.5
Age of HH member						
Below 25	24.8	12748	14141	89	89	10.9
25-64	56.0	15295	16946	107	106	10.8
Over 64	19.2	13260	15193	93	95	14.6
Area						
North	45.1	16969	18969	119	119	11.8
Center	19.2	16120	18115	113	114	12.4
south+islands	35.7	9871	10869	69	68	10.1
Housing tenure						
Tenants, total	30.7	11924	12995	84	82	9.0
Owners, total	69.3	15313	17207	107	108	12.4
Owner: own outright	59.1	14891	16837	104	106	13.1
Owner: on mortgage	10.2	17747	19340	124	122	9.0
Tenant: private market (non-subsidized)	8.9	13165	13165	92	83	0.0
Tenant: rent-subsidized due to living in social housing	5.8	9499	10639	67	67	12.0
Tenant: reduced-rent by landlord (family, employer, etc)	6.2	12087	12610	85	79	4.3
Tenant: rent-free	9.8	12115	14465	85	91	19.4
ALL	100.0	14273	15914	100	100	11.5

Source: SHIW04

Columns:
A: Population share;
B and C : mean equivalent income (B: baseline income, C: income+IR);
D and E: income position (D: baseline income, E: income+IR);
F: % increase in mean equiv. Income.

Effects on overall inequality and poverty

We now turn to analyze the effect of imputed rent on inequality and poverty, both for the overall population and for several subgroups.

Different inequality measures are considered in order to capture differences along the entire distribution of income; as absolute inequality measure[9] we consider the Gini mean difference and as relative indices[10] we compare the Gini index, the Atkinson index with different value of the sensitivity parameter, the mean log difference (MLD), which is sensitive to transfers in the lower tail of the income distribution, the half squared coefficient of variation (half SCV),which is sensitive to the upper tail, and the decile ratios.

Table 15 shows that inequality decreases in general, according to both datasets, when IR is included in the income of the entire population; this is true for all the relative measures considered, with the exceptions of the decile ratio 10/50, for the both data sets. According to the absolute Gini measure, instead, inequality increases when adding IR to the whole population. This is because the relative net IR is decreasing with income (Table 11), while the absolute net IR is increasing with income (Table 12).

In accordance to the analysis described in ISTAT (2006), the inclusion of imputed rent in income causes two opposite effects: it enlarges the income differences between market tenants, on the one hand, and rent-free tenants, owners and reduced renters, on the other, and it reduces total inequality, since imputed rent is distributed less unequally than the baseline income. The difference of relative Gini without and with imputed rent, for the Italian case, shows that the second effect is the predominant one.

Looking at the subgroups, with SHIW04 dataset, inequality slightly increases when IR is added to owners on mortgage and decreases if it is added to the outright owners and tenants. The absolute inequality, which takes into account also the differences in the means, increases significantly for the owners and very few for the tenants.

The result is in accordance with most of the studies on IR (see, among others, Frick and Grabka, 2003 and Marical et al. 2006), which report a reduction in the degree of inequality in several developed countries, when IR is included in the income distribution.

The last three rows of Table 15 show, instead, the Foster-Greer-Thorbecke (FGT) poverty index for three different parameters; the poverty line is not fixed, in this analysis, i.e. it has been updated with IR. The result on the overall distribution is a decrease in all the poverty indices, according to EU-SILC, while SHIW04 registers a slight increase in the headcount ration (FGT0) and a reduction in FGT1 and FGT2 measures. Focusing on the subgroups, SHIW04 asserts that adding IR only to owners, increases poverty, while adding

[9] "An index of absolute inequality demands invariance to equal additions to all incomes." (Lambert (2001), page 111)

[10] An index that satisfies the scale invariance, i.e. an index that is not "affected by equiproportionate (scale) changes in all incomes" is a relative index. (Lambert (2001), page 110)

IR only to tenants, keeping constant all the other groups, reduces poverty. When employing EU-SILC, the only difference is that the addition of IR to the outright owners reduces poverty.

Tab.15: Change (in %) in inequality and poverty indices, EU-SILC 2004 and SHIW04

Proportional change in %								
		EU-SILC 2004						
Inequality Indices	Baseline (index value)	Total	Owner-occupiers			Tenants		
			Total	own outright	on mort-gage	Total	rent-free	reduced-rent
Gini mean Difference	4846	7.8	7.6	5.8	2.1	0.7	0.7	0.1
Gini	0.325	-2.6	-0.6	-0.7	0.5	-1.6	-1.2	-0.4
Atkinson 0.5	0.091	-6.1	-2.0	-2.2	0.7	-3.4	-2.6	-0.8
Atkinson 1.5	0.272	-8.4	-3.3	-3.7	0.8	-4.1	-2.8	-1.2
MLD	0.193	-7.1	-2.2	-2.6	0.9	-4.1	-3.0	-1.0
Half SCV	0.293	-10.0	-6.2	-5.5	-0.5	-3.7	-3.0	-0.8
DR: 90/10	4.224	-2.7	0.6	-0.9	1.2	-2.9	-1.8	-0.7
DR: 90/50	1.984	-1.1	-0.2	-0.5	0.5	-0.9	-0.8	0.0
DR: 10/50	0.470	1.7	-0.9	0.4	-0.6	1.9	1.1	0.6
FGT0	0.186	-4.5	-0.1	-0.5	0.2	-3.2	-1.9	-1.6
FGT1	0.055	-7.2	0.6	-0.9	1.5	-6.0	-4.2	-1.6
FGT2	0.027	-11.8	-0.9	-2.5	1.5	-9.1	-6.7	-2.2
	SHIW04							
Inequality Indices	Baseline (index value)	Total	Owner-occupiers			Tenants		
			Total	own outright	on mort gage	Total	rent-free	Reduced Rent
Gini mean Difference	4841	7.9	8.2	6.9	1.5	0.4	0.6	-0.1
Gini	0.339	-3.2	-1.0	-1.1	0.4	-1.8	-1.0	-0.8
Atkinson 0.5	0.101	-7.4	-3.0	-3.1	0.5	-3.8	-2.1	-1.6
MLD	0.217	-10.6	-5.3	-5.5	0.6	-4.5	-2.4	-2.0
Half SCV	0.217	-10.6	-5.3	-5.5	0.6	-4.5	-2.4	-2.0
DR: 90/10	4.284	-3.0	0.7	0.1	0.4	-2.4	-1.8	-1.1
DR: 90/50	1.991	-2.6	-1.9	-2.3	-0.2	-1.8	-1.2	-0.8
DR: 10/50	0.465	0.4	-2.6	-2.4	-0.6	0.6	0.6	0.2
FGT0	0.200	1.3	9.3	8.5	3.0	-4.6	-1.3	-1.3
FGT1	0.058	-2.2	7.5	6.9	1.5	-5.5	-3.0	-2.4
FGT2	0.028	-8.0	4.0	3.6	1.2	-8.3	-4.2	-4.0

Source: SHIW04, EU-SILC 2004

Effect of IR on inequality and poverty by groups

Tables 16 and 17 decompose the changes in inequality by subgroups. For each different partition, the inequality within groups is always much higher than the inequality between groups, i.e. its percentage contribution to aggregate inequality is always greater than 85%; moreover, the introduction of IR always decreases the within groups inequality, causing a

decrease in total inequality. The between groups inequality reduces in all the groupings except the ones induced by geographical area and housing tenure.

When imputed rent is added to the whole population, inequality decreases more for the mono-parental households, for the family with householder unemployed or with upper secondary education, for the individuals aged less than 25 or more than 64 years old, in the Center of Italy, for outright owners, for rent-free tenants and for reduced renters in social housing. Such results are very similar in both analysis obtained from the two different datasets.

Tab.16: Change in inequality, by subgroups (EUSILC 2004)

Characteristic of household or household head	A	B	C	D	E	F
Household type						
Older single persons or couples	17.2	0.138	0.127	-7.8	12.3	12.2
Younger single persons or couples	14.8	0.208	0.186	-10.7	16.0	15.4
Couple with children up to 18	34.9	0.205	0.190	-7.1	37.0	37.0
Mono-parental household	2.7	0.273	0.236	-13.6	3.8	3.5
Other household types	30.4	0.181	0.173	-4.3	28.5	29.4
% Within groups inequality	./.	0.188	0.175	-7.2	97.7	97.6
% Between groups inequality	./.	0.004	0.004	-3.8	2.3	2.4
Socio-economic HH head						
Blue collar worker	20.9	0.133	0.129	-3.0	14.3	15.0
White collar worker	18.6	0.121	0.119	-2.2	11.7	12.3
Self-employed	17.3	0.292	0.266	-8.8	26.2	25.7
Unemployed	3.2	0.379	0.323	-15.0	6.2	5.7
Pensioner	29.1	0.129	0.121	-6.3	19.4	19.6
Other	11.0	0.236	0.210	-10.9	13.5	12.9
% Within groups inequality	./.	0.176	0.163	-7.2	91.2	91.1
% Between groups inequality	./.	0.017	0.016	-5.9	8.8	8.9
Education of HH head						
Tertiary education	9.1	0.209	0.192	-8.3	9.8	9.7
Upper secondary education	28.8	0.164	0.150	-8.6	24.5	24.1
Lower secondary education	30.4	0.183	0.168	-8.3	28.8	28.5
Primary education or less	31.7	0.161	0.151	-5.9	26.4	26.7
% Within groups inequality	./.	0.173	0.159	-7.7	89.5	89.0
% Between groups inequality	./.	0.020	0.020	-2.6	10.5	11.0
Age of HH member						
Below 25	24.8	0.216	0.199	-7.8	27.7	27.5
25-64	55.9	0.196	0.183	-6.8	56.8	57.1
Over 64	19.3	0.140	0.129	-7.7	14.0	13.9
% Within groups inequality	./.	0.190	0.176	-7.2	98.6	98.5
% Between groups inequality	./.	0.003	0.003	-2.5	1.4	1.5
Geographical Area						
North	45.3	0.155	0.142	-8.7	36.5	35.9
Center	19.3	0.161	0.145	-9.8	16.0	15.6
South+islands	35.4	0.214	0.195	-8.9	39.3	38.6
% Within groups inequality	./.	0.177	0.161	-9.0	91.9	90.0
% Between groups inequality	./.	0.016	0.018	13.9	8.1	10.0
Housing tenure						
Tenants, total	30.1	0.205	0.192	-6.7	32.1	32.2
Owners, total	69.9	0.179	0.164	-8.3	64.7	63.9
Owner: own outright	55.7	0.183	0.166	-9.0	52.7	51.7
Owner: on mortgage	14.2	0.158	0.151	-4.6	11.6	11.9
Tenant: private market	12.7	0.220	0.220	0.0	14.5	15.6
Tenant: rent-subsidized (social housing and by landlord)	5.5	0.182	0.163	-10.4	5.2	5.0
Tenant: rent-free	12.0	0.199	0.165	-17.4	12.4	11.0
% Within groups inequality	./.	0.186	0.171	-8.3	96.4	95.2
% Between groups inequality	./.	0.007	0.009	23.1	3.6	4.8

Column A: Population share;
Column B and C: mean log deviation (B: disposable income ; C: disposable income+IR);

Column D: % change in inequality;
Column E and F: % contribution to aggregate inequality (E: disposable income; F: disposable income+IR);

Tab. 17: Change in mean income and inequality, by subgroups (SHIW04)

Characteristic of household or household head	A	B	C	D	E	F
Household type						
Older single persons or couples	14.0	0.176	0.160	-9.3	11.4	11.5
Younger single persons or couples	11.5	0.215	0.189	-12.1	11.4	11.2
Couple with children up to 18	37.7	0.229	0.211	-7.9	39.8	41.0
Mono-parental household	2.5	0.220	0.187	-14.8	2.6	2.4
Other household types	34.3	0.200	0.171	-14.4	31.6	30.2
% Within groups inequality	./.	0.210	0.187	-10.9	96.6	96.3
% Between groups inequality	./.	0.007	0.007	-3.1	3.4	3.7
Socio-economic HH head						
Blue collar worker	19.5	0.125	0.118	-5.6	11.2	11.8
White collar worker	22.2	0.124	0.116	-6.3	12.6	13.2
Self-employed	13.8	0.333	0.305	-8.7	21.2	21.7
Unemployed	3.6	0.393	0.310	-21.2	6.5	5.7
Pensioner	30.8	0.146	0.136	-6.9	20.7	21.6
Other	10.1	0.290	0.215	-26.0	13.5	11.2
% Within groups inequality	./.	0.186	0.166	-11.2	85.8	85.2
% Between groups inequality	./.	0.031	0.029	-7.4	14.2	14.8
Education of HH head						
Tertiary education	8.2	0.193	0.175	-9.1	7.3	7.4
Upper secondary education	31.9	0.196	0.160	-18.5	28.7	26.2
Lower secondary education	32.4	0.187	0.175	-6.7	27.9	29.2
Primary education or less	27.5	0.169	0.156	-7.8	21.4	22.1
% Within groups inequality	./.	0.186	0.165	-11.2	85.4	84.9
% Between groups inequality	./.	0.032	0.029	-7.6	14.6	15.1
Age of HH member						
Below 25	24.8	0.260	0.218	-16.3	29.6	27.8
25-64	56.0	0.211	0.194	-8.0	54.4	56.0
Over 64	19.2	0.163	0.148	-8.8	14.4	14.7
% Within groups inequality	./.	0.214	0.191	-10.6	98.4	98.5
% Between groups inequality	./.	0.003	0.003	-11.8	1.6	1.5
Geographical Area						
North	45.1	0.165	0.150	-9.1	34.3	34.9
Center	19.2	0.188	0.139	-26.2	16.6	13.7
South+islands	35.7	0.214	0.190	-11.4	35.2	34.9
% Within groups inequality	./.	0.187	0.162	-13.3	86.1	83.5
% Between groups inequality	./.	0.030	0.032	6.0	13.9	16.5
Housing tenure						
Tenants, total	30.7	0.216	0.196	-9.1	30.6	31.1
Owners, total	69.3	0.209	0.182	-12.9	66.5	64.8
Owner: own outright	59.1	0.207	0.179	-13.8	56.3	54.3
Owner: on mortgage	10.2	0.203	0.190	-6.1	9.5	10.0
Tenant: private market	8.9	0.242	0.242	0.0	10.0	11.1
Tenant: rent-subsidized in social housing	5.8	0.188	0.154	-17.8	5.0	4.6
Tenant: reduced-rent by landlord	6.2	0.161	0.160	-0.4	4.6	5.1
Tenant: rent-free	9.8	0.225	0.185	-17.8	10.2	9.4
% Within groups inequality	./.	0.208	0.184	-11.6	95.5	94.5
% Between groups inequality	./.	0.010	0.011	9.7	4.5	5.5

Column A: Population share;
Column B and C: mean log deviation (B: disposable income ;
C: disposable income+IR);

Column D: % change in inequality;
Column E and F: % contribution to aggregate inequality (E: disposable income; F: disposable income+IR).

The impact of IR on inequality can be analyzed graphically through the Lorenz and the Generalized Lorenz curves.

Lorenz curves plot cumulative proportions of income units, ordered according to their income, against cumulative proportions of their incomes. Generalized Lorenz curves differ from the Lorenz curves in having as ordinates the absolute cumulative incomes instead of the relative ones.

Fig.7: Lorenz curves before and after IR, EU-SILC 2004

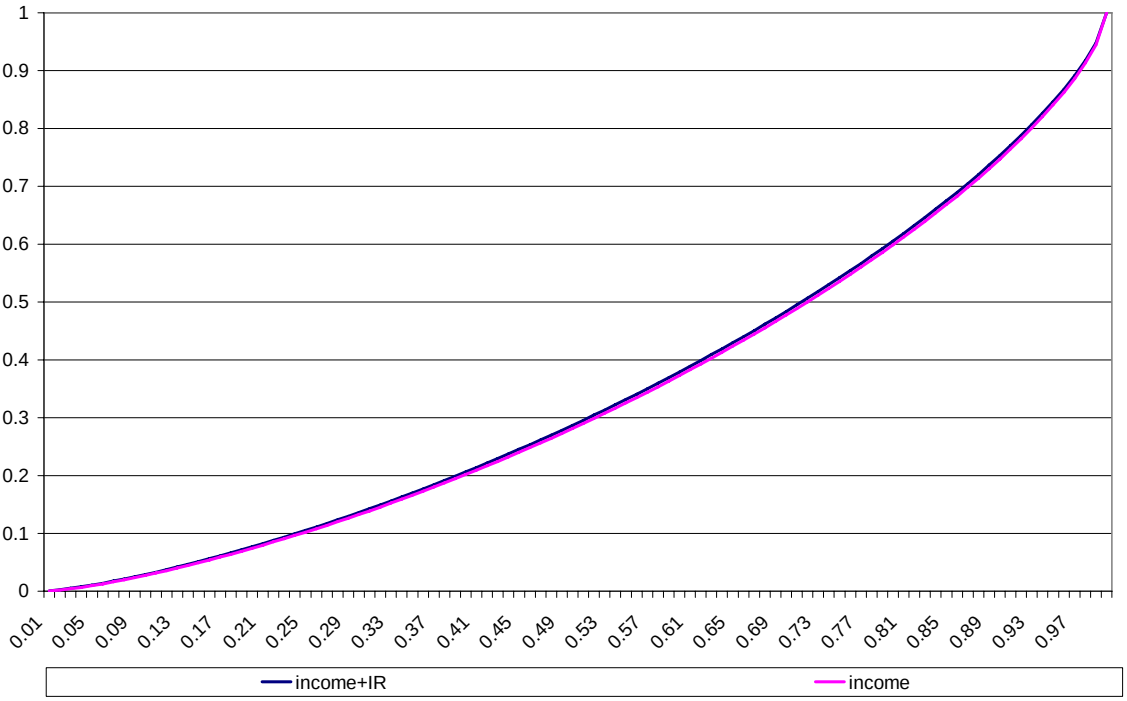


Fig.8: Generalized Lorenz curves before and after IR, EU-SILC 2004

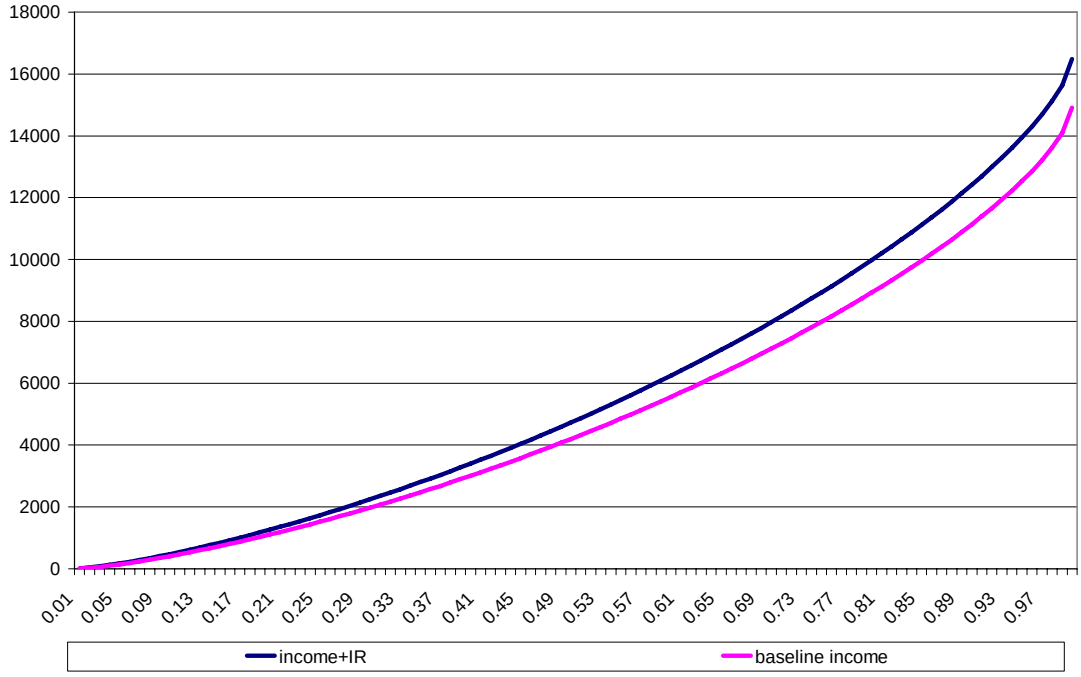


Figure 7 compares the Lorenz curve of the baseline income distribution to the Lorenz curve of the income in which IR is added to all the beneficiaries; the difference between the two curves is very small, but shows a slight reduction in inequality after IR, in correspondence to each population proportion. Such result is consistent with what is shown in Table 10, according to which the income share of the quintiles is less dispersed after IR.

Therefore, there is a slight Lorenz domination between the income distribution, obtained adding IR to all the individuals, and the baseline income distribution.

From the Generalized Lorenz curves in Figure 8 we observe that the overall welfare increases, adding IR; therefore, the reduction in inequality is reinforced by the increase in disposable mean income, due to IR.

Therefore, a Generalized Lorenz dominance relation can be established between the income distribution, obtained including IR to everybody, and the baseline income distribution

Fig.9: Lorenz curves by subgroups, baseline income. EU-SILC 2004

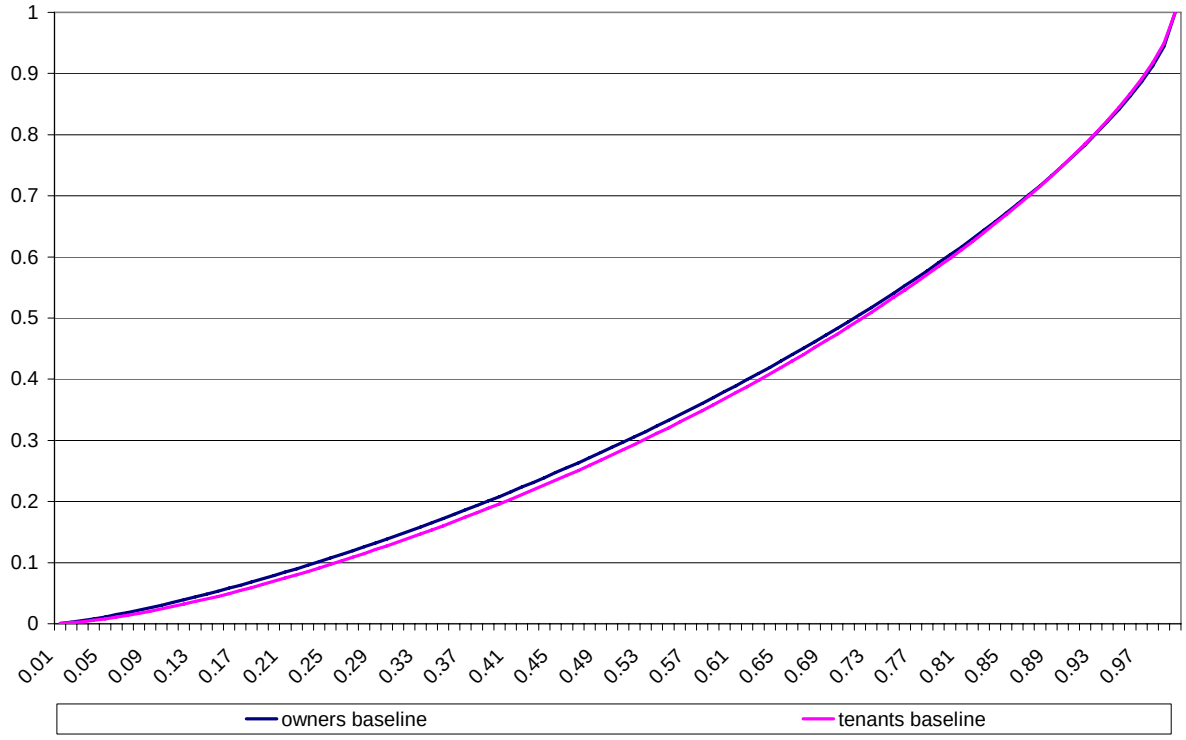


Fig.10: Lorenz curves by subgroups, income with IR. EU-SILC 2004

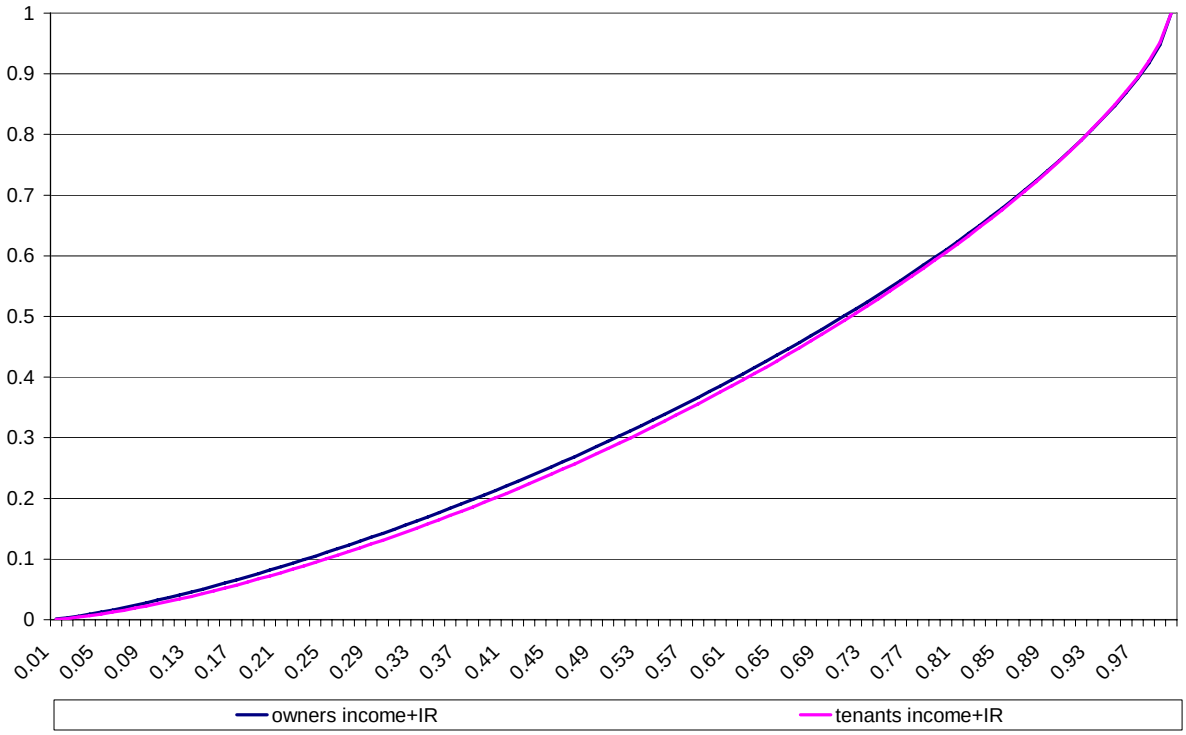
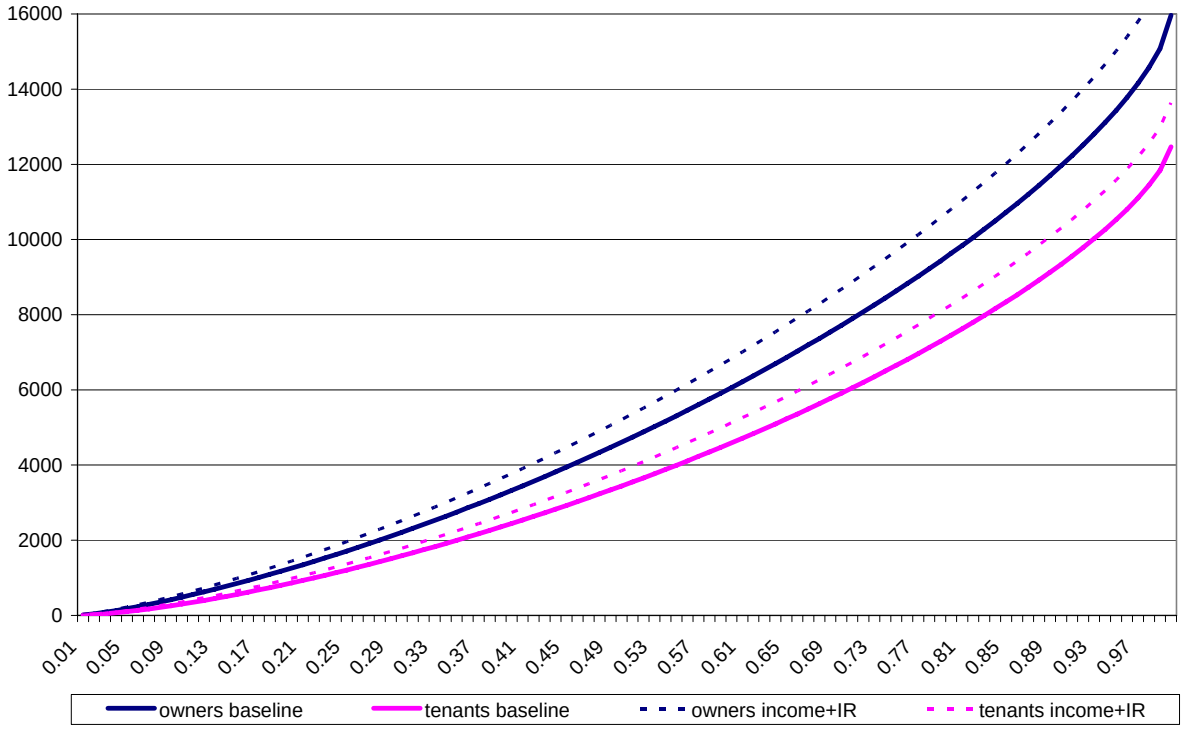


Fig.11: Generalized Lorenz curves by subgroups, EU-SILC 2004



Finally, Figures 9, 10 and 11 compare Lorenz and Generalized Lorenz curves before and after IR, for tenants and owners. In the three figures, IR is added to all the beneficiaries and

the effects of IR are compared, distinguishing owners and tenants.

Figure 9 and 10 show that, neither before nor after IR, a dominance relation exists between the Lorenz curves of the two tenure status-groups, as the Lorenz curve of tenants intersects the Lorenz curve of owners once from below. Therefore, in correspondence of the low-middle class inequality is lower within owners than within tenants, while the other way round happens for the high incomes.

Figure 11 shows, moreover, that welfare increases for both tenure status-groups, when IR is added to the entire population; a welfare dominance relation exists between the Generalized Lorenz curves, according to which, both before and after IR, the welfare of the owners is always higher than the welfare of the tenants. Welfare increases slightly more within owners than within tenants.

A last observation regards the impact of imputed rent on poverty levels, by subgroups, as synthesized by Tables 18 and 19.

For the poverty measures FGT0 and FGT1 the results are quite different between the two data sets, as already noticed for the overall population. In SHIW04, indeed, poverty indices slightly increase for some tenure categories, while in EU-SILC such indices always decrease.

Looking at the poverty index FGT2, instead, analogies can be found again: poverty reduces mostly for younger single or couples, for the unemployed and white collar householders, for householders with upper secondary and tertiary educated, for the over64, for North and Center of Italy, for outright owners and rent-free tenants.

Tab. 18: Change in poverty indices, by subgroups, EU-SILC 2004

		FGT0				FGT1				FGT2			
Characteristic of household or household head	**A**	**B**	**C**	**D**	**E**	**B**	**C**	**D**	**E**	**B**	**C**	**D**	**E**
Household type: Older single persons or couples	17.2	0.169	-15.0	0.156	0.139	0.032	-16.1	0.098	0.089	0.011	-21.2	0.070	0.062
Younger single persons or couples	14.8	0.136	-12.2	0.109	0.100	0.046	-21.7	0.123	0.104	0.024	-29.0	0.134	0.108
Couple with children up to 18	34.9	0.222	-3.2	0.415	0.421	0.069	-5.0	0.437	0.447	0.035	-10.1	0.459	0.468
Mono-parental household	2.7	0.340	-5.6	0.049	0.048	0.130	-12.8	0.063	0.060	0.074	-19.1	0.075	0.068
Other household types	30.4	0.167	2.9	0.272	0.293	0.051	0.4	0.278	0.301	0.023	-1.7	0.263	0.293
Socio-economic HH head: Blue collar worker	20.9	0.241	-0.3	0.270	0.281	0.064	-2.3	0.242	0.255	0.028	-7.0	0.214	0.226
White collar worker	18.6	0.063	3.5	0.062	0.068	0.010	4.1	0.034	0.038	0.003	3.8	0.022	0.026
Self-employed	17.3	0.204	-6.2	0.189	0.186	0.068	-7.1	0.211	0.212	0.034	-10.6	0.220	0.223
Unemployed	3.1	0.607	-2.5	0.102	0.105	0.296	-8.2	0.168	0.166	0.187	-13.4	0.219	0.216
Pensioner	29.1	0.126	-10.0	0.196	0.185	0.025	-9.1	0.134	0.131	0.009	-11.1	0.097	0.098
Other	11.0	0.304	-6.8	0.180	0.176	0.106	-12.6	0.211	0.198	0.055	-17.8	0.228	0.213
Education of HH head: Tertiary education	9.1	0.076	-15.8	0.037	0.032	0.020	-12.9	0.033	0.031	0.010	-15.8	0.033	0.031
Upper secondary education	28.8	0.114	-8.0	0.176	0.170	0.032	-13.8	0.167	0.155	0.016	-22.1	0.170	0.151
Lower secondary education	30.4	0.229	-3.1	0.373	0.379	0.071	-7.1	0.390	0.391	0.035	-12.5	0.402	0.399
Primary education or less	31.6	0.244	-3.2	0.413	0.419	0.071	-4.1	0.409	0.423	0.033	-6.4	0.395	0.420
Age of HH member: Below 25	24.8	0.251	-1.5	0.333	0.344	0.082	-5.1	0.368	0.376	0.042	-10.1	0.389	0.397
25-64	55.9	0.167	-3.7	0.500	0.504	0.052	-7.3	0.525	0.524	0.026	-12.1	0.533	0.531
Over 64	19.3	0.161	-12.8	0.166	0.152	0.031	-13.7	0.108	0.100	0.011	-18.2	0.078	0.072
Area: North	45.3	0.095	-14.8	0.231	0.206	0.023	-18.3	0.188	0.165	0.010	-23.8	0.171	0.148
Center	19.3	0.125	-17.9	0.129	0.111	0.032	-18.0	0.113	0.100	0.015	-22.1	0.109	0.096
South+islands	35.4	0.337	1.9	0.641	0.684	0.109	-2.4	0.699	0.735	0.054	-7.4	0.720	0.756
Housing tenure: Tenants, total	30.1	0.282	-0.5	0.456	0.475	0.093	-3.2	0.509	0.530	0.048	-7.7	0.534	0.559
Owners, total	69.9	0.145	-7.8	0.544	0.525	0.039	-11.3	0.491	0.470	0.018	-16.5	0.466	0.441
Owner: own outright	55.7	0.161	-7.9	0.481	0.463	0.044	-11.8	0.441	0.419	0.020	-17.6	0.418	0.391
Owner: on mortgage	14.2	0.082	-6.5	0.063	0.061	0.020	-6.8	0.051	0.051	0.009	-7.3	0.048	0.050
Tenant: private market	12.7	0.291	20.0	0.197	0.248	0.096	22.3	0.220	0.290	0.049	21.6	0.233	0.322
Tenant: rent-subsidized (social housing+by landlord)	5.5	0.302	-2.2	0.089	0.091	0.099	-5.8	0.098	0.100	0.049	-10.8	0.101	0.102
Tenant: rent-free	12.0	0.265	-23.5	0.170	0.136	0.088	-31.3	0.190	0.141	0.045	-40.4	0.200	0.135

A: Population share;

B : Poverty index (disposable income);

C : Change in Poverty index (after IR);

D: % contribution to aggregate poverty (disposable income);
E: % contribution to aggregate poverty (disposable income+IR);

Tab. 19: Change in poverty indices, by subgroups, SHIW04

		FGT0				FGT1				FGT2			
Characteristic of household or household head	**A**	**B**	**C**	**D**	**E**	**B**	**C**	**D**	**E**	**B**	**C**	**D**	**E**
Household type: Older single persons or couples	14.0	0.182	-18.2	0.127	0.103	0.032	-11.0	0.078	0.071	0.010	-16.4	0.052	0.048
Younger single persons or couples	11.5	0.088	-7.5	0.050	0.046	0.029	-20.0	0.058	0.047	0.015	-30.4	0.062	0.047
Couple with children up to 18	37.7	0.246	5.7	0.464	0.484	0.072	0.5	0.468	0.481	0.035	-4.0	0.467	0.488
Mono-parental household	2.5	0.301	13.9	0.038	0.043	0.116	-11.8	0.051	0.046	0.066	-24.5	0.059	0.049
Other household types	34.3	0.187	2.5	0.320	0.324	0.058	0.6	0.346	0.356	0.029	-5.5	0.359	0.369
Socio-economic HH head: Blue collar worker	19.5	0.244	6.0	0.237	0.248	0.059	3.4	0.199	0.210	0.024	-0.6	0.168	0.181
White collar worker	22.2	0.072	2.1	0.080	0.081	0.014	4.8	0.053	0.057	0.005	-16.4	0.043	0.039
Self-employed	13.8	0.170	4.8	0.118	0.122	0.055	-8.1	0.131	0.123	0.026	-12.3	0.128	0.122
Unemployed	3.6	0.605	7.2	0.109	0.115	0.309	-4.4	0.192	0.187	0.204	-10.6	0.261	0.254
Pensioner	30.8	0.171	-7.8	0.263	0.239	0.040	-6.5	0.214	0.204	0.016	-7.6	0.170	0.171
Other	10.1	0.382	2.1	0.193	0.195	0.121	0.9	0.212	0.219	0.064	-6.8	0.231	0.234
Education of HH head: Tertiary education	8.2	0.035	-0.9	0.015	0.014	0.008	-11.3	0.011	0.010	0.004	-28.9	0.012	0.009
Upper secondary education	31.9	0.124	-3.5	0.197	0.188	0.034	-11.1	0.186	0.169	0.017	-21.8	0.191	0.162
Lower secondary education	32.4	0.241	3.1	0.391	0.399	0.068	2.0	0.382	0.398	0.031	-1.5	0.362	0.387
Primary education or less	27.5	0.289	1.9	0.397	0.399	0.089	-1.7	0.421	0.423	0.045	-6.8	0.436	0.441
Age of HH member: Below 25	24.8	0.275	5.0	0.341	0.354	0.086	-0.6	0.370	0.376	0.044	-7.0	0.390	0.394
25-64	56.0	0.174	3.3	0.487	0.497	0.052	-1.6	0.507	0.510	0.026	-7.8	0.516	0.518
Over 64	19.2	0.179	-12.0	0.172	0.149	0.037	-9.0	0.123	0.114	0.014	-13.6	0.094	0.088
Area: North	45.1	0.077	5.6	0.173	0.181	0.019	-5.5	0.145	0.140	0.008	-14.2	0.124	0.115
Center	19.2	0.094	-16.9	0.090	0.074	0.023	-18.5	0.076	0.064	0.011	-27.4	0.077	0.061
South+islands	35.7	0.413	2.5	0.737	0.745	0.126	0.1	0.779	0.797	0.063	-5.2	0.799	0.824
Housing tenure: Tenants, total	30.7	0.297	4.2	0.456	0.469	0.087	3.0	0.463	0.488	0.044	-4.2	0.479	0.498
Owners, total	69.3	0.157	-1.2	0.544	0.531	0.045	-6.6	0.537	0.512	0.021	-11.5	0.521	0.502
Owner: own outright	59.1	0.169	-2.7	0.498	0.479	0.048	-7.5	0.487	0.461	0.022	-12.6	0.467	0.444
Owner: on mortgage	10.2	0.089	14.8	0.046	0.052	0.028	2.2	0.050	0.052	0.015	-1.2	0.054	0.058
Tenant: private market	8.9	0.263	27.4	0.118	0.148	0.078	32.4	0.121	0.164	0.041	27.8	0.129	0.179
Tenant: rent-subsidized in social housing	5.8	0.416	1.1	0.120	0.120	0.137	-3.9	0.136	0.134	0.070	-14.1	0.144	0.135
Tenant: reduced-rent by landlord	6.2	0.233	17.8	0.072	0.084	0.056	30.7	0.060	0.080	0.026	25.9	0.057	0.078
Tenant: rent-free	9.8	0.298	-18.4	0.147	0.118	0.086	-26.3	0.146	0.110	0.042	-34.1	0.149	0.106

A: Population share;

B : Poverty index (disposable income);

C : Change in Poverty index (after IR);

D: % contribution to aggregate poverty (disposable income);
E: % contribution to aggregate poverty (disposable income+IR);

7. Concluding remarks

The aim of the report has been the study of the effects of imputed rent on income distribution, inequality and poverty in Italy.

Two different data sets, EU-SILC 2004 and SHIW04, have been employed and three alternative approaches to define imputed rent are available. The opportunity cost approach has been regarded as the preferred one.

According to such approach, the empirical analysis discussed in this report has shown that the two data sets provide similar and consistent results. The main difference is the degree of IR impact on income distribution, inequality and poverty: SHIW04 data always produce higher impact of IR (i.e. higher percentage of beneficiaries and higher increase in mean income and greater decrease in inequality indices), if compared to EU-SILC 2004.

Slight discrepancies between the results produced by the two sources of data are unavoidable, due to the different information in particular on tenure status, mortgage interests cost and maintenance housing cost.

The descriptive analysis of the structure of the Italian population by tenure status reveals that only 10-12 % of the Italian private households are renters at market price, while about 70% own their main residence, mainly without mortgage. Significantly high is the percentage of households that rent their house free (about 10-12%).

By income quintile, 55% of the lowest quintile and 80% of the highest quintile are homeowners. Rent-free are mainly young family, outright owners are mainly the elderly, reduced renters are mainly the mono-parental households.

Therefore, not surprisingly, the main results from the empirical analysis of the effects of IR underline that about 85% of the entire Italian population benefit from IR. Outright owners benefit in relative terms much more than owners with mortgage, rent-free much more than reduced renters. In general, low quintiles benefit more than high quintiles (in relative terms) while the opposite happens in absolute terms.

Absolute inequality increases, relative inequality and relative poverty decrease, Lorenz curve slight increases and Generalized Lorenz curve increases.

Poverty (FGT2) decreases more for young couples and singles, for elderly, for mono-parental households, for unemployed, low educated, for owners and rent-free.

Concluding, it seems that imputed rent improves the economic situation of the weaker social classes.

Appendix A: Results from alternative approach with EU-SILC 2004

This Appendix contains the main results from the self-assessment approach with EU-SILC 2004 data set; compared to the opportunity cost approach, such alternative method determines higher percentage of beneficiaries, higher increase in disposable income, higher absolute IR-transfers mean. The trend in inequality and poverty remains the same as in the preferred approach.

Tab.A1: Effective and potential beneficiaries from IR (%), self-assessment approach

Population share of beneficiaries (%)							
Quintile	**Self-assessment-Approach**						
	Total	**Owner-occupiers**			**Tenants**		
		Total	**own outright**	**on mort-gage**	**Total**	**rent-free**	**reduced-rent**
1 (bottom)	79.6	54.0	48.1	6.0	25.5	16.8	8.7
2	85.4	64.8	52.5	12.2	20.6	14.1	6.5
3	86.5	70.4	56.2	14.2	16.1	11.5	4.6
4	88.9	75.0	58.7	16.3	13.9	9.4	4.5
5 (top)	90.3	79.3	61.2	18.1	11.0	8.0	3.1
All	86.1	68.7	55.4	13.4	17.4	12.0	5.5

Tab.A2: Income share and increase (%) in income after IR, self-assessment approach

SELF ASSESSMENT APPROACH								
Quintile	**Income Share**							
	Baseline in %	**Total**	**Owner-occupiers**			**Tenants**		
			Owner-occupiers	**own outright**	**on mort-gage**	**Tenants**	**rent-free**	**reduced-rent**
1 (bottom)	7.4	7.7	7.4	7.5	7.3	---	7.6	7.5
2	12.7	13.1	12.8	12.8	12.7	---	12.8	12.8
3	17.1	17.4	17.3	17.2	17.1	---	17.2	17.1
4	22.6	22.7	22.8	22.8	22.7	---	22.6	22.6
5 (top)	40.1	39.1	39.7	39.7	40.2	---	39.8	40.0
All	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0
Quintile	**% Increase in disposable income**							
	Baseline (EUR) mean	**Total**	**Owner-occupiers**			**Tenants**		
			Total	**own outright**	**on mort-gage**	**Total**	**rent-free**	**reduced-rent**
1 (bottom)	5548	28.1	19.1	17.2	1.9	9.0	6.9	2.1
2	9493	21.0	15.5	13.1	2.4	5.5	4.4	1.1
3	12755	18.6	15.1	12.5	2.6	3.5	2.9	0.6
4	16854	15.8	13.4	10.8	2.6	2.4	1.9	0.5
5 (top)	29911	12.1	10.7	8.5	2.1	1.5	1.3	0.2

All	14910	16.4	13.3	11.0	2.3	3.1	2.5	0.6

Tab.A3: Inequality and poverty changes (%) after IR, self-assessment approach

Self-assessment-Approach								
Inequality indices	**Baseline**	**Total**	**Owner-occupiers**			**Tenants**		
			Total	**own outright**	**On mort-gage**	**Total**	**rent-free**	**reduced-rent**
Gini mean difference	4846	11.8	12.0	9.8	3.0	---	1.1	0.0
Gini	0.325	-4.0	-1.1	-1.1	0.6	---	-1.4	-0.6
Atkinson 0.5	0.091	-8.7	-3.2	-3.1	1.0	---	-2.8	-1.2
Atkinson 1.5	0.272	-11.2	-4.6	-4.7	1.1	---	-2.8	-1.6
MLD	0.193	-9.9	-3.4	-3.4	1.2	---	-3.1	-1.5
Half SCV	0.293	-13.5	-8.6	-8.2	0.4	---	-3.5	-1.3
DR: 90/10	4.224	-3.6	1.1	0.1	2.1		-1.9	-1.0
DR: 90/50	1.984	-2.5	-0.6	-0.3	1.1	---	-1.3	-0.4
DR: 10/50	0.470	1.1	-1.7	-0.4	-1.1	---	0.6	0.6
FGT0	0.186	0.9	0.9	0.2	0.8	---	-1.4	-1.9
FGT1	0.055	2.4	2.4	0.0	2.1	---	-3.2	-2.1
FGT2	0.027	-0.1	-0.1	-2.7	1.9	---	-5.7	-3.0

Appendix B: Results from alternative approaches with SHIW04

The second Appendix contains the main results from the application of the alternative approaches, with SHIW04 data set; compared to the opportunity cost approach, the capital market and the self-assessment methods determine higher percentage of beneficiaries and higher increase in disposable income. The trend in inequality and poverty remains the same as in the preferred approach, i.e. an increase in poverty and inequality of the owners and a reduction for the rent-free. The percentage of increase is, however, higher with the alternative approaches than with the preferred one.

Tab B1: Effective beneficiaries, alternative approaches

Population share of beneficiaries (%)									
Quintile	Self-assessment-Approach					Capital-Market-Approach 3%			
	Total	Owner-occupiers			Tenants	Total	Owner-occupiers		
		Total	own outright	on mort-gage	rent-free		Total	own outright	on mort-gage
1 (bottom)	66.6	51.9	48.6	3.4	14.7	51.5	51.5	47.4	4.1
2	72.9	61.7	54.7	7	11.2	60.8	60.8	54.2	6.6
3	81.2	73	63.1	9.8	8.2	71.5	71.5	62.6	8.9
4	80.3	70.8	59.4	11.5	9.5	71.7	71.7	59.9	11.8
5 (top)	85	79.4	64.8	14.6	5.6	80.4	80.4	65.1	15.4
All	77.2	67.4	58.1	9.2	9.8	67.2	67.2	57.8	9.4

Tab B2: Income shares, alternative approaches

Income Share									
Quintile	Self-assessment-Approach						Capital-Market-Approach 3%		
	Baseline in %	Total	Owner-occupiers			Tenants	Owner-occupiers		
			Owner-occupiers	own outright	on mort-gage	rent-free	Total	own outright	on mort-gage
1 (bottom)	7.2	7.3	7.1	7.1	7.2	7.3	7.1	7.1	7.2
2	12.2	12.3	12.2	12.2	12.1	12.3	12.2	12.2	12.2
3	16.9	17.1	17.1	17.1	16.9	16.9	17.0	17.0	16.8
4	22.6	22.8	22.8	22.7	22.6	22.6	22.7	22.7	22.6
5 (top)	41.1	40.5	40.9	40.9	41.2	40.9	41.0	41.0	41.2
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Tab B3: Increase (%) in disposable income after IR, alternative approaches

% Increase in disposable income									
Quintile	Self-assessment-Approach						Capital-Market-Approach 3%		
	Baseline (EUR) mean	Total	Owner-occupiers			Tenants	Owner-occupiers		
			Total	own outright	on mort-gage	rent-free	Total	own outright	On mort-gage
1 (bottom)	5027	21.5	16.7	15.6	1.1	4.9	14.1	13.2	0.8
2	8473	18.5	15.2	14.1	1.2	3.3	12.4	11.6	0.7
3	11737	17.2	15.0	13.4	1.6	2.2	13.0	11.7	1.3
4	15607	15.9	14.0	12.2	1.8	1.9	11.1	9.8	1.3
5 (top)	27861	11.7	10.9	9.3	1.6	0.9	9.7	8.4	1.3
All	13739	15.1	13.2	11.7	1.5	1.9	11.2	10.0	1.2

Tab B4: Changes (%) in inequality and poverty after IR, alternative approaches

Proportional change in %										
Inequality indices	Baseline (index value)	Self-assessment-Approach					Capital-Market-Approach 3%			
		Total	Owner-occupiers			Tenants	Total	Owner-occupiers		
			Total	own outright	on mort-gage	rent-free		Total	own outright	on mort-gage
Gini mean difference	4841	13.1	12.9	11.2	2.1	1	11.0	11.0	9.6	1.7
Gini	0.339	-1.7	-0.3	-0.4	0.6	-0.9	-0.2	-0.2	-0.3	0.5
Atkinson 0.5	0.101	-5.1	-2.3	-2.3	0.7	-2	-1.6	-1.6	-1.8	0.7
MLD	0.217	-8	-4.7	-4.7	0.8	-2.3	0.5	0.5	0.5	0.1
Half SCV	0.217	-8	-4.7	-4.7	0.8	-2.3	-1.9	-1.9	-2.1	0.7
DR: 90/10	4.284	-1.7	1.8	1.6	1.5	-1.6	-1.9	-1.9	0.7	-2.1
DR: 90/50	1.991	-2.3	-1.8	-1.4	1.1	-1.4	1.8	1.8	1.5	0.9
DR: 10/50	0.465	-0.6	-3.7	-3	-0.4	0	-0.8	-0.8	-0.9	0.1
FGT0	0.2	2.8	7.2	7.3	4	-1.5	-2.6	-2.6	-2.4	-0.9
FGT1	0.058	2.4	8.3	6.6	1.1	-2.8	-15.7	-15.7	5.3	3.0
FGT2	0.028	-4.4	2.5	1.7	0.1	-4.1	-18.2	-18.2	5.5	1.2

Appendix C: Results from the "imputed rent" variables in IT-SILC 2004

In this Appendix we report the distributional effects of imputed rent, employing the two variables "fyaffimp" and "fytot_imp", described in Section 2.

We note that the definition of imputed rent proposed in the Italian version of EU-SILC 2004 induces higher proportions of beneficiaries and higher increase in disposable income, both in relative and in absolute terms. Moreover, the effects on inequality and poverty are quite different from the results presented in this report.

Tab C1: Effective beneficiaries from IR, with "fyaffimp" as IR

Tenure status	Share with IR=0	Share with IR>0	Total
Owner occupiers	0.14	99.86	100.0
Thereof			
outright owner	0.16	99.84	100.0
with outstanding mortgage	0.03	99.97	100.0
Tenants	42.24	57.76	100.0
Thereof			
in private market (non-subsidized)	100.0	0.0	100.0
rent-subsidized in social housing and by landlord	0.72	99.32	100.0
rent-free	0.22	99.78	100.0
Total	12.82	87.18	100.0

Source: EU-SILC 2004

Tab C2: Increase in income (%) and transfer mean, with the variable "fyaffimp" as IR

Quintile		% Increase in disposable income						
	Baseline (EUR) mean	Total	Owner-occupiers			Tenants		
			Total	own outright	on mort-gage	Total	rent-free	reduced-rent
1 (bottom)	5548	34.8	25.8	22.6	3.2	9.0	6.9	1.9
2	9493	26.2	20.8	16.6	4.2	5.4	4.4	1.0
3	12755	23.2	19.8	15.4	4.4	3.4	2.9	0.6
4	16854	19.8	17.4	13.2	4.2	2.4	1.9	0.5
5 (top)	29911	15.0	13.5	10.2	3.3	1.5	1.3	0.2
All	14910	20.4	17.3	13.5	3.8	3.1	2.5	0.6

Quintile		Equivalized IR-transfer (EUR) mean						
	Baseline (EUR) mean	Total	Owner-occupiers			Tenants		
			Total	own outright	on mort-gage	Total	rent-free	reduced-rent
1 (bottom)	5548	1929	1431	1255	176	498	383	105
2	9493	2491	1976	1579	396	515	415	95
3	12755	2961	2522	1966	556	439	366	72
4	16854	3337	2929	2225	704	408	324	82
5 (top)	29911	4479	4037	3038	999	442	382	58
All	14910	3039	2579	2013	566	460	374	82

Source: EU-SILC 2004

Tab C3: Changes (%) in inequality and poverty after IR, with “fytot_imp”

Inequality indices	Post-Gov.-Inc.	Proportional change in %						
		Total	Owner-occupiers			Tenants		
	Baseline		Total	own outright	on mort-gage	Total	rent-free	reduced-rent*
Gini mean difference	4846	23.1	13.9	11.7	-5.2	5.9	1.5	-3.6
Gini	0.325	2.2	-2.9	-1.6	-8.7	2.7	-1.0	-4.1
Atkinson 0.5	0.091	1.8	-7.9	-7.1	-12.3	-7.3	1.4	-13.5
Atkinson 1.5	0.272	-2.8	-18.0	-16.2	-27.0	-12.2	6.6	-16.0
MLD	0.193	0.6	-12.0	-10.2	-20.6	17.5	-7.8	-13.3
Half SCV	0.293	1.1	-2.6	-16.5	41.3	-22.6	-28.8	-38.3
DR: 90/10	4.224	9.8	-4.3	0.8	-21.4	13.1	4.8	3.1
DR: 90/50	1.984	3.9	-0.2	1.7	-5.4	6.7	4.9	2.1
DR: 10/50	0.470	-5.3	4.3	0.9	20.2	-5.7	0.0	-1.1
FGT0	0.186	4.8	-5.6	-1.5	-29.8	11.8	1.5	6.8
FGT1	0.055	4.8	-18.7	-13.5	-49.0	13.2	-2.9	-1.0
FGT2	0.027	-3.8	-33.4	-29.6	-58.6	12.1	-13.4	-13.3

Source: EU-SILC 2004

Appendix D: Econometric results.

Tables D1 and D2 show the results obtained from the linear regression run, in the opportunity cost approach, to estimate imputed rent.

Tab. D1: Linear regression with EU-SILC 2004

Linear regression					
Lnrentsm04		Coefficient	Robust Std. Err.	t	P>|t|
No. rooms		-0.045	0.010	-4.49	0
Densely populated area	1=yes; 0=no	0.430	0.051	8.52	0
intermediate area	1=yes; 0=no	0.228	0.042	5.38	0
North Italy	1=yes; 0=no	0.054	0.064	0.85	0.405
south Italy	1=yes; 0=no	-0.349	0.075	-4.64	0
square meter [0,50]	1=yes; 0=no	0.470	0.035	13.38	0
square meter [51,80]	1=yes; 0=no	0.141	0.019	7.28	0
square meter >120	1=yes; 0=no	-0.081	0.065	-1.25	0.227
Income<=5000 euro	1=yes; 0=no	-0.131	0.053	-2.46	0.023
5000<income<=10000 euro	1=yes; 0=no	-0.188	0.038	-4.95	0
10000<income<=15000 euro	1=yes; 0=no	-0.087	0.035	-2.47	0.023
15000<income<=20000 euro	1=yes; 0=no	0.001	0.032	0.05	0.963
25000<income<=30000 euro	1=yes; 0=no	0.064	0.036	1.77	0.092
30000<income<=40000 euro	1=yes; 0=no	0.065	0.043	1.51	0.147
40000<income<=50000 euro	1=yes; 0=no	0.142	0.046	3.11	0.006
50000<income<=75000 euro	1=yes; 0=no	0.186	0.058	3.21	0.004
Income>75000 euro	1=yes; 0=no	0.165	0.105	1.58	0.131
Bathroom	1=yes; 0=no	0.103	0.065	1.59	0.127
Shower	1=yes; 0=no	0.002	0.092	0.03	0.979
Balcony	1=yes; 0=no	0.055	0.029	1.91	0.071
Garden	1=yes; 0=no	0.000	0.030	-0.01	0.995
hot water	1=yes; 0=no	0.111	0.121	0.91	0.372
Damaged roof	1=yes; 0=no	-0.121	0.032	-3.78	0.001
Humidity	1=yes; 0=no	-0.010	0.029	-0.33	0.745
Light	1=yes; 0=no	-0.044	0.023	-1.89	0.073
Pollution	1=yes; 0=no	0.008	0.028	0.27	0.792
Noise	1=yes; 0=no	0.057	0.024	2.36	0.028
criminality	1=yes; 0=no	0.020	0.054	0.37	0.718
Heating	1=yes; 0=no	0.037	0.037	0.99	0.334
duration occupancy <=4 years	1=yes; 0=no	0.151	0.027	5.51	0
duration occupancy [12,30] years	1=yes; 0=no	-0.158	0.035	-4.53	0
duration occupancy >=31 years	1=yes; 0=no	-0.390	0.068	-5.73	0
Constant		0.935	0.160	5.84	0
R-squared		0.3568			
No. observations		2911			

Tab D2. Linear regression with SHIW04

Linear regression					
lnrentsm04		Coef.	Robust Std. Err.	T	P>|t|
City center	1=yes; 0=no	0.034	0.039	0.87	0.395
luxury area	1=yes; 0=no	0.014	0.054	0.27	0.793
luxury house	1=yes; 0=no	0.194	0.043	4.53	0
north Italy	1=yes; 0=no	0.099	0.066	1.5	0.15
south Italy	1=yes; 0=no	-0.254	0.056	-4.51	0
Square meter [0,50]	1=yes; 0=no	0.534	0.091	5.86	0
Square meter [51,80]	1=yes; 0=no	0.232	0.058	3.98	0.001
Square meter >120	1=yes; 0=no	-0.432	0.142	-3.04	0.007
built <1919	1=yes; 0=no	-0.153	0.072	-2.12	0.047
1919<=built <=1948 years	1=yes; 0=no	-0.060	0.076	-0.79	0.44
1949<=built <=1971 years	1=yes; 0=no	-0.033	0.071	-0.46	0.648
1981<=built <=1990 years	1=yes; 0=no	-0.101	0.071	-1.42	0.171
1991<=built <=2000 years	1=yes; 0=no	0.037	0.099	0.37	0.714
built >=2001 years	1=yes; 0=no	0.442	0.101	4.37	0
Income<=5000 euro	1=yes; 0=no	-0.207	0.096	-2.15	0.045
5000<income<=10000 euro	1=yes; 0=no	-0.363	0.087	-4.17	0.001
10000<income<=15000 euro	1=yes; 0=no	-0.138	0.061	-2.27	0.035
15000<income<=20000 euro	1=yes; 0=no	-0.081	0.058	-1.38	0.183
25000<income<=30000 euro	1=yes; 0=no	-0.007	0.068	-0.1	0.925
30000<income<=40000 euro	1=yes; 0=no	0.076	0.070	1.08	0.295
40000<income<=50000 euro	1=yes; 0=no	0.059	0.069	0.87	0.397
50000<income<=75000 euro	1=yes; 0=no	0.253	0.139	1.82	0.085
Income>75000 euro	1=yes; 0=no	0.120	0.282	0.42	0.677
Bathroom	1=yes; 0=no	1.152	0.132	8.73	0
Heating	1=yes; 0=no	0.051	0.053	0.97	0.346
duration occupancy <=4 years	1=yes; 0=no	0.076	0.050	1.51	0.147
duration occupancy [12,30] years	1=yes; 0=no	-0.088	0.054	-1.64	0.118
duration occupancy >=31 years	1=yes; 0=no	-0.134	0.092	-1.46	0.162
Citysize [0;20000]	1=yes; 0=no	-0.180	0.071	-2.54	0.02
Citysize [20000;40000]	1=yes; 0=no	-0.123	0.061	-2.01	0.058
Citysize>500000	1=yes; 0=no	0.290	0.090	3.22	0.005
Constant		0.132	0.170	0.78	0.446
R-squared	0.3914				
No. Observations	706				

References

Agenzia delle Entrate (2004),"Annuario del contribuente", in www.agenziaentrate.gov.it.

Agenzia delle Entrate (2005), "IRPEF: dichiarazione dei redditi e versamenti", series "L'agenzia informa", in www.agenziaentrate.gov.it.

Agenzia delle Entrate (2005), "Guida fiscale per la casa", series "L'agenzia informa", in www.agenziaentrate.gov.it.

Agenzia delle Entrate (2007), "Guida al nuovo sistema di tassazione dell'IRPEF", series "L'agenzia informa", in www.agenziaentrate.gov.it.

Anci-CNC (2005), "Imposta Comunale sugli Immobili. Analisi Statistiche. Aliquote 2005 e Gettito 2004", in www.ancicnc.it.

Baldini, M., Bosi, P. and Pacifico, D.(2006), "Gli effetti distributivi dei trasferimenti in kind: il caso dei servizi educativi e sanitari", mimeo.

Ball, M. (2005), "RICS European Housing Review 2005", RICS.

Censis, Sunia and Cgil (2007), "Più case in affitto, più mobilità sociale e territoriale", Indagine Censis-Sunia-Cgil sulle famiglie in affitto, mimeo.

Cipolletta, I., Buffo, M. , de Caprariis, G., Gambuto, S. and Guelfi, A. (2006), "Mercato degli affitti, regole e mobilità", Confindustria centro studi, mimeo.

Frick, J.R. and Grabka, M. M. (2003). "Imputed rent and income inequality: A decomposition analysis for Great Britain, West Germany and the U.S.", Review of Income and Wealth, 49, 513-536.

ISTAT (2006), "Reddito e condizioni di vita. Indagine sulle condizioni di vita, anno 2004", Collana Informazioni, 31.

IReR (2005), "Le politiche per la casa: Scenari e ipotesi strategiche", Final report.

Lambert, P. J. (2001), The distribution and redistribution of income, Manchester University Press.

Marical, F., Mira d'Ercole, M., Vaalavuo, M. and Verbist, G.(2006), “Publicly-provided services and the distribution of resources”, OECD Social, Employment and Migration Working Papers no.4549 (4), 513-536.

National Agency for Enterprise and Housing (2004)**,** “Housing Statistics in the European Union 2003”, Copenhagen.

National Board of Housing, Building and Planning, Sweden and Ministry for Regional Development of the Czech Republic (2005), “Housing Statistics in the EU 2004**”**, in www.boverket.se.

Pacifico D. (2006), “Benefici in kind e distribuzione del reddito”, mimeo.

Smeeding, T. M, Saunders, P. Coder, J., Jenkins, S., Fritzell, J., Hagenaars, A. J. M., Hauser, R. And Wolfson, M. (1993), “Poverty, inequality, and family living standards impacts across seven nations: The effect of noncash subsidies for health, education and housing”, Review of Income and Wealth, 39, 3.