LWS AND ITALY.
HOW DIFFERENT WEIGHTING SCHEMES AFFECT WEALTH ESTIMATES

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Abstract

The Luxembourg Wealth Study (LWS) is a project with the objective of ex-post reconciling micro data on households wealth for a certain number of nations. Italy participate to the LWS project, as previously has endorsed Luxembourg Income Study (LIS), providing wealth data collected through the Survey on Household Income and Wealth (SHIW). In its first part, this study compares how analysis of Italian household wealth differs using LWS data instead of the original SHIW dataset. In the second part of the paper some kind of survey weights adjustment is proposed in order to increase the standardisation of the estimators. In fact, the standardisation of the LWS variable ("lisification") doesn't involve an harmonization of survey weights. Because with the actual structure of the LWS database this harmonization cannot be implemented, to give a flavour of the potentiality of this method, a set of different weight is developed for the SHIW and their impact on estimates is benchmarked to the original survey weights. The results show that: 1) the β version of LWS appears to limit excessively the coverage of household assets; 2) in order to increase consistency of cross-country analysis it is sensible to switch to a common definition of head of household as main income earner; 3) it would be ideal to have a LWS vector of national survey weights calibrated to a common set of auxiliary information.

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1. Introduction[1]

The growing attention for wealth in economic analysis is witnessed by the increasing number of studies on the topic (Wolff, 1992; Guiso et al., 2002; Brandolini et al., 2004; Faiella and Neri, 2004; Klevmarken 2006; Aaron and Muellbauer, 2006)[2].

As underlined in Sierminska et al. (2006), the scarce availability of comparable wealth data across countries posed the basis for the Luxembourg Wealth Study (LWS). The main objective of this project is to ex-post reconcile micro data on households wealth for a certain number of nations and to disseminate this information using the same rationale adopted for Luxembourg Income Study (LIS)[3].

Italy participates to the LWS project, as previously had endorsed LIS, providing wealth data collected through the Survey on Household Income and Wealth (SHIW), a sample survey that has been conducted by the Bank of Italy since 1965 to gather information on the economic behaviour of Italian households with a unique focus on the measurement of Income and Wealth components.

The objective of this study is twofold: to compare how analysis of Italian household wealth can differ using LWS data instead of the original SHIW dataset and to focus on the issue of survey weigths homogenization. In fact, the standardization of the LWS variable (the so-called "lisification") does not involve adjustments of survey weights. To increase the standardisation of the estimators, the study proposes the use of calibration techniques to align LWS data to a common set of known auxiliary information. Because with the actual structure of the LWS these weights cannot be implemented, to give a flavour of the potentiality of this method, two different sets of weights are developed for the SHIW and their impact on estimates is benchmarked to the original survey weights.

The study is structured as follows: in Section 2 SHIW is presented. Section 3 reports the main findings about Italian household wealth in 2002 using LWS and SHIW. In Section 4, the

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[2] According to the bibliography of the Survey on Household Income and Wealth, the share of wealth-related studies using the survey was 9 per cent in the 80's, 13 per cent in the 90's almost reaching 20 per cent in the first part of the 2000.

[3] LIS disseminates a harmonized database that can be considered as the best source for international comparative studies regarding income distribution. The datasets can be accessed via the internet mailing system by submitting SAS, SPSS or STATA programs. For further information see LIS website www.lisproject.org.

rationale of survey weights is introduced and the effect of two alternative set of survey weights on wealth estimates is presented. Finally, the main conclusions are drawn.

2. The Survey on Household Income and Wealth (SHIW)

The SHIW has been conducted by the Bank of Italy since 1965 to collect information on the economic behaviour of Italian households with a unique focus on the measurement of Income and Wealth components[4]. The main objective of the SHIW is to obtain estimates of how income and wealth are distributed across Italian households.

The basic statistical unit is the household, defined as a group of individuals linked by ties of blood, marriage or affection, sharing the same dwelling and pooling all or part of their incomes. Institutionalized population is not included. The sample comprises about 8,000 households. Data are collected by means of personal interviews conducted by professionally trained interviewers and using computer-assisted devices (Computer Assisted Personal Interviewing).

Data collection is entrusted to a specialized company and the interview stage is preceded by a series of meetings at which officials from the Bank of Italy and representatives of the company give instructions directly to the interviewers. The households contacted for interviews, who are guaranteed complete anonymity, receive a booklet describing the purpose of the survey and giving a number of examples of the ways in which the data are used. The participating households may request a copy of the results of a previous survey.

The core sections of the questionnaire remain basically unchanged. Two monographic topics are added in each wave (e.g. in 2002 a set of questions concerning households' relationships with banks and intergenerational transfers; in 2000 a set of questions on housework and care for family members, and household consumer behaviour). In order to reduce the response burden, these sections are only administered to a random subset of the sample.

The sample is drawn in two stages (municipalities and households), with the stratification of the primary sampling units (municipalities) by region and demographic size. Within each stratum, the municipalities in which interviews would be conducted are selected by including all municipalities with a population of more than 40,000 (self representing units - SRUs) and randomly selecting smaller towns with probability proportional to the resident population (non self

[4] Further details on the SHIW are given in Bank of Italy (2006).

representing units - NSRUs). The individual households to be interviewed are then selected randomly.

The Bank of Italy provides users with the microdata, in an anonymous form. As regards the most recent surveys (from 1989), the information is distributed in the *Annual database* practically in full (also including data found in the monographic sections of the individual surveys). Only information that could lead indirectly to the identification of the respondents is excluded. Data from 1977 are contained in the *Historical database* ($SHIW_{HD}$) but only includes the subsets of variables considered useful for longitudinal analyses: the version 4.0 (January 2006) of this archive is the main source of the β version of LWS (LWS_{β}) for Italy. Data are distributed in ASCII, SAS and STATA format. Microdata, documentation and publications (in Italian and English) are freely available at the Internet address www.bancaditalia.it/statistiche/ibf.

3. Italian Household Wealth in 2002: estimates based on SHIW and LWS data

3.1 The information in the two sources

The differences between $SHIW_{HD}$ and LWS_{β} wealth estimates can be due to a bunch of factors.

The unit of analysis[5]. The unit of analysis does not affect full-sample wealth estimates but it can make a difference when analyzing wealth measures in association with head of household characteristics. In the $SHIW_{HD}$, there are three available definitions for the head of household: head of household declared, i.e. the person identified by the interviewer as responsible for the household budget[6]; head of household as the main income earner; head of household according to a former Eurostat definition[7]. From the wave 2000 on, most of the analyses completed by the Survey

[5] While unit of analysis is not going to change full-sample wealth estimates, it can makes difference when analyzing wealth measures in association with head of household characteristics.

[6] This is a "survey stage" definition which satisfies the need to determine the best informed person

[7] Recently, Eurostat has endorsed the main income earner definition. "*Eurostat recommends that the assignment of the reference person should be based on objective criteria. For the tabulation of consumption patterns in the Household Budget surveys, the appropriate criterion is the contribution to household income, by preference the person to be chosen should be the adult (16+) contributing most to the total income of the household*". See Eurostat (2003), p.21.

Department of the Bank of Italy, adopted the main income earner definition[8]. Although in Sierminska et al. (2006) it is declared that this is also the approach followed by LWS, it is apparent that in the LWS_β the head of household information concerns the survey stage definition.

Survey weights. In the $SHIW_{HD}$, the PESO*xx* file contains two sets of weights. They are almost equivalent except for the auxiliary information they are coherent with. A first (PESOFL) is designed in such a way that survey elements assume the same characteristics of the population distribution with regard to sex, age group, geographic area, size of municipality and labour force status (as derived from population registers and the labour-force survey). The other vector of weights (PESOFIT) has the same features except that it is not constrained to any information regarding labour force status and it uses a more detailed auxiliary information about person age[9]. PESOFL is the survey weight available using LWS_β. The use of different weights and their effect on wealth estimates will be further explored in the section 4.

Wealth classification. The assets/liabilities covered by the two sources are somehow different. Due the issue of cross-country comparability, wealth according to LWS_β (variable NW1) under-states the wealth definition available for $SHIW_{HD}$**.** For example non-financial assets do not include business-related assets nor collectibles. On the other hand the $SHIW_{HD}$, due to the issue of comparability across time, provides a subset of the information collected and fully available in the *Annual database*. Consequently, it can happen that $SHIW_{HD}$ under-states LWS_β; for example the financial liabilities of $SHIW_{HD}$ do not include informal (i.e. the amount of payables vis-à-vis relatives or friends not living in the house at the end of the year.) and business-related debts.

3.2 Italian households' wealth in 2002: LWS and SHIW

The above reported differences, must be taken into account while evaluating the statistics on Italian households' wealth that can be produced using SHIW or LWS data.

Household characteristics. Relative to $SHIW_{HD}$, in the LWS_β the head of households is more often female (+7 percentage points), not employed (in particular "housewife", +5.5 percentage points), with a lower level of education and older (heads older than 50 are almost 5 per percentage points more than in the $SHIW_{HD}$) (table A1, cols 1-2).

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[8] In particular, the head of household is defined as the person with the highest work or pension income within the household.

[9] Both those weights sum to the number of observation in the sample. In the same dataset there is also a version of these weights that sum up to the population (PESOFL2 and PESOFIT2).

Household asset participation. In the two sources there is the same number of households holding at least a financial asset (81.2 per cent), while those owning non-financial assets are lower in the LWS_{β} (72.2 against the 95.6 per cent of the $SHIW_{HD}$). Owning financial liabilities is slightly more probable in the LWS_{β} (19.9 per cent) (table A2, cols 1-2).

Average wealth. In 2002, the average Italian household could rely on a wealth amount of about €187,000 according to $SHIW_{HD}$ and €154,000 using LWS_{β}, a difference that amounts to more than €700 billions for the bulk of Italian households. If this information is considered in connection with the age of the head, the two databases provide also a very different picture. In households with head at most 30 year old, average net worth is 84 per cent of total average using $SHIW_{HD}$ data, but it is less then the half using LWS_{β}. This is largely due to the lower incidence of non-financial assets for this group of households in the LWS_{β}. According to this data source, the same group exhibits average financial liabilities twice the total average, while using $SHIW_{HD}$ this group present average debts that are comparable with total average (table A3, rows 1-2).

Asset shares in wealth. Both LWS_{α} and $SHIW_{HD}$ indicate that large part of household wealth is held in non-financial assets. Compared to LWS_{β}, $SHIW_{HD}$ presents a higher share of non-financial assets and a lower share of financial assets and liability. The association of wealth composition with the age of the household shows that the incidence of debt on total wealth is almost four times in the LWS_{β} with respect to $SHIW_{HD}$ when considering the household with a younger head (up to 30 years old). On the asset side, the same group owns an amount of financial assets corresponding to 9 per cent of total wealth using $SHIW_{HD}$ and to 14 per cent using LWS_{β} (table A3, rows 1-2).

Wealth distribution. The picture from the two sources regarding wealth distribution is fairly similar. Gini index is 0.621 for $SHIW_{HD}$ and 0.603 for LWS_{β}. The difference is essentially explained by the different coverage of non-financial assets: not including very high concentrated assets such as businesses and collectibles reduces wealth concentration. On the other hand, higher coverage of financial liabilities should slightly increase concentration (but with modest effects given that debts are contracted by less than a fifth of the households and that they have a small incidence on net worth) (table A5, cols 1-2; figure A1).

4. The effect of different weighting schemes on wealth estimates

The previous section listed the differences in wealth definition in LWS_{β} and $SHIW_{HD}$ and reported how these two sources depict Italian household wealth in 2002. An element not considered in the analysis was how the different information contents of survey weights could affect wealth estimates. In this section, after a brief introduction on the role of weighting, two different sets of weights are developed for the SHIW and their impact on estimates is benchmarked to the original survey weights.

4.1 A brief digression on weighting

Kish (1992) identifies several reasons to use weights in analysing sample survey data. Some are a consequence of the selection procedure such as the *sampling design*, for example when stratification with disproportional allocation is used, the *nonresponse* process and the correction of *frame imperfections*. Others depend on the estimators used in the analysis, as in the case of post-stratification, generalized regression estimators or other methods included in the more general class of *calibrated estimators*.

As pointed out by Groves *et al.* (2004) the final weight is the product of different stages. The first one reflects the selection process implied by the sampling scheme (design weight); the second integrates the correction for the participation to the survey (nonresponse adjusted weight); the third exploits the available auxiliary information vector (at population or sample level) and incorporates it in the final weight (calibrated weight)

The final survey weight is inversely proportional to the probability of selecting the *i-th* unit from the population and can be used to obtain unbiased estimates from the sample through the Horvitz-Thompson estimator also known as π estimator (Särndal et al., 1992, pp. 42-48).

The rationale of this class of estimators is to inflate each observation y_i in the sample dividing it by its probability of selection π_i. For example, the weighted mean, when weights are inversely proportional to the probability of selection, is an approximately unbiased estimator of the population mean given a fixed sample size[10].

[10] This estimator is technically biased (because it is a ratio of two random variables) but its relative bias is bounded by the coefficient of variation of the denominator (the sampling weights), usually very small for large samples. See Kish (1965), chapter 2.

The unbiasedness of the π estimator is not for free: usually, there is a loss of efficiency due to the use of weights; in the case of the estimate of the variance of the mean, this loss is proportional to the squared coefficient of variation of the weights (Kish, 1992)[11].

A possibility to reduce the impact of weights on the variance of the estimator is to make use of Generalized Regression Estimator (GREG). The idea behind the GREG is to supplement the HT estimator with a set of auxiliary information (in a multivariate context) correlated to the study variable (Särndal and Lundström, 2005). The HT estimator is corrected using the "gap" between the sample estimate and information on the value of the auxiliary vector in the population (available from larger surveys or census data). In general, the aim of calibration is to increase precision as it allows both to reduce differences between the sample and the population distribution with respect to some auxiliary variables and to reduce weights variability (in the case of post-stratification this happens only if the post-strata have a smaller within-stratum variance with respect to the overall variance).

Faiella and Gambacorta (2006) gives a detailed description of the SHIW weighting process and its impact on the estimates. Their main findings are that the increasing variability induced by using weighted estimators is compensated by the bias reduction even when performing analysis on sample domains[12].

4.2 Can "lisified" weights be useful?

The standardisation of the LWS variable ("lisification") does not involve adjustments to survey weights. To increase the standardisation of the estimators, it is possible to take advantage of some sort of calibration estimators to align LWS data to a set of common known auxiliary information. This set of "common" (i.e. comparable) survey weights can be benchmarked to the original survey weights to evaluate the impact of this procedure on the estimates and their variability. With the actual structure of LWS_β these weights cannot be implemented. In fact, At present the β-version of the LWS disseminates household-level information only. Unfortunately the

[11] In particular, if, across the sampling units, the outcome being measured is not correlated with the probability of selection then weighting will inflate the sampling variability of the estimators.

[12] The study also propose for the first time a set of longitudinal weights for the SHIW, i.e. weights that, giving their enhanced description of the "panel population", are better suited to perform longitudinal analysis.

auxiliary information usually available from registers consists of distributions of person-level characteristics[13].

But to give some hints of the potential of how different weighting approach can affect wealth estimates, two different sets of weights are developed within the SHIW and their effect on estimates is evaluated.

4.2.1 The effect of different weighting schemes on estimates

The two vectors of weights will adjust the original $SHIW_{HD}$ using two different approaches. The first will increase the ability of the weights to mimic population distributions using a more detailed post-stratification. The second will exploit a study of D'Alessio and Faiella (2002) applying a non-response model to correct for differential survey participation.

A finer post-stratification of the $SHIW_{HD}$ weights ($SHIW_{PS}$).

As described in detail in Faiella and Gambacorta (2006), SHIW weights are constructed in three different steps: a first weight is derived assigning each member of the household an initial weight defined as the inverse of his/her probability of inclusion in the sample (design weight); this weight is then corrected for non-response and then calibrated to account for additional information coming from the panel units and from external surveys. This last stage of the weighting process weights exploits the external information available using the *Raking ratio* method. The rationale of this technique, originally proposed by Deming and Stephan (1940), is to adjust survey weights in order to align the survey-based distributions with external distributions for each control variable in turn, and then to repeat the whole process until a given convergence criterion is met[14].

Using this method, the $SHIW_{HD}$ weights (PESOFL) are aligned simultaneously so that weighted sample estimates assume the same characteristics as the population distribution with regard to sex (2 classes), age group (2 classes), geographic area (3 classes), size of municipality of residence (4 classes) and labor-force status (3 classes). To improve the external information available a new set of weight is computed using 5 classes for age, the same classes for the other characteristics and adding the information on the marital status (4 classes).

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[13] Even when is available from registers, it is unclear the extent to which household-level information are cross-country comparable because there is no common agreement on household definition. See for example Verma (2006).

[14] See, for example, Kalton and Flores Cervantes (2003). As underlined by Särndal and Lundström (2005) p. 75, this method is computationally equivalent to a particular type of GREG known as *multi-way classification* estimator.

A non-response robust weight ($SHIW_{NR}$).

Non-response is a problem in statistical surveys whenever it leads to samples where the less co-operative segments of the population are underrepresented, thus generating biased estimates (Särndal and Lundström, 2005). To limit these potentially distorting effects in the SHIW, particular attention is devoted in the fieldwork to elicit households' co-operation. As previously mentioned, the sample is post-stratified on the basis of certain characteristics of the household's head to align the sampling distribution with distributions derived from external sources, in order to correct for those differences in the households' propensity to participate. However, standard post-stratification techniques cannot fully compensate for the bias induced by the lower propensity of richer households to take part in sample surveys, as wealth is typically not an available characteristic[15].

D'Alessio and Faiella (2002) examine a few alternative models to estimate the ex-ante probability to participate in the SHIW and find that they tend to produce similar results. The model that can be most easily replicated for the various surveys exploits the information on the number of contacts needed to obtain an interview. More precisely, it assumes that the households requiring at least two visits before conceding the interview are representative of non-responding units as a whole. Under this assumption, the unconditional probability of responding in the survey is taken to coincide with the estimated probability of responding at the first visit. Once an estimate of such probability $\hat{\pi}_{ri}$ is available, an unbiased estimator of the population mean is (e.g. Little and Rubin, 1987):

(1) $$\bar{y} = \sum_{i=1}^{R}\left(\frac{1}{\pi_i \hat{\pi}_{ri}}\right) y_i \Bigg/ \sum_{i=1}^{R}\left(\frac{1}{\pi_i \hat{\pi}_{ri}}\right),$$

where π_i is the probability of selecting in the sample the *i-th* unit and *R* is the number of responding households.

To obtain unbiased estimates, the procedure proposed by D'Alessio and Faiella (2002) is adopted and to adjust the survey weights as in (1), calibrating the model intercept to allow for the fitted response rate to be equal to the 2002 actual response rate. The adjusted weights are finally post-stratified to re-establish the marginal distributions of components by sex, age group, labor-force status, geographical area and demographic size of the municipality of residence, as registered in population and labour force statistics.

[15] An excellent example on how to supplement survey estimators with external information is the case of SCF. See for example Kennickel (1999) and Kennickel and Woodburn (1999).

4.2.2 The impact of these different weights on wealth analysis

In this section, the same analysis of Italian households' wealth already presented in section 3.2 are produced using $SHIW_{PS}$ and $SHIW_{NR}$ weighting schemes. In what follows it will be evident that the big role in affecting estimates is played by $SHIW_{NR}$, because the correction of the non-response is explicitly modelled in relation with the outcome variable.

Household characteristics. If compared with $SHIW_{HD}$, $SHIW_{NR}$ head of household is younger, more educated and he/she is more probable to be employed. $SHIW_{PS}$ head is, except for the post-stratification variables age and marital status, substantially equivalent to $SHIW_{HD}$ head (table A1, cols 2-4).

Household asset participation. $SHIW_{HD}$ and $SHIW_{PS}$ present the same figures. Using $SHIW_{NR}$ estimates the probability of holding financial assets increase of almost 3 percentage points, while that of owning non-financial assets or to be indebted is only slightly higher (table A2, cols 2-4).

Average wealth. $SHIW_{HD}$ and $SHIW_{PS}$ show the same figures. The average wealth held by Italian household in 2002 , increase of 9 percentage point using $SHIW_{NR}$ with a marked effect on financial assets (+16 per cent). Considering wealth patterns in association with the age of the head, $SHIW_{NR}$ adjustment increases particularly the financial assets of the elderly and non-financial assets of the youngest heads (table A3, rows 2-4).

Asset shares in wealth. There is no major effects of weighting on wealth composition. Again $SHIW_{HD}$ and $SHIW_{PS}$ exhibit basically the same results. $SHIW_{NR}$ correction slightly increases the share of wealth held in financial assets (+0.7 percentage points) (table A4, rows 2-4).

Wealth distribution. The picture the two alternative weighting schemes provide regarding wealth distribution in Italy is fairly similar (table A5, cols 2-4).

5. Conclusions and some suggestions for LWS_{α}

The present study has explored the sources of potential differences between LWS and national with a particular focus on weighting.

Firstly, using the Italian LWS data and the SHIW, the analysis is centred on the potential difference between the two sources emphasising the role of the definition of the head of household and the wealth definition. The former affects households' attributes, increasing in the LWS the incidence of female, lower educated, unemployed or older heads of household. The latter reduces,

according to LWS_β, the number of Italian households holding non-financial assets and it lowers their wealth. Taking into consideration the age of the households' heads, these differences are amplified for households headed by younger person, that appear to be particular disadvantaged in terms of both non-financial assets and financial liabilities if compared with the global average when LWS_β is analysed.

Secondly, the role of survey weights in wealth analysis was considered. The idea was to examine how standardisation of the estimators, using some kind of calibration to align LWS_β weights to a common set of known auxiliary information, can affect wealth estimates. Because with the actual structure of the LWS database these weights cannot be implemented, to give a flavour of the potential of this method, two different sets of weights are developed for the SHIW and their impact is benchmarked to the original survey weights.

A significant influence on wealth estimates is played by the non-response robust weight ($SHIW_{NR}$). Using this vector of weights the probability of holding financial assets increases of almost 3 percentage points and the average wealth by 9 percentage point, with a marked effect on financial assets (+16 per cent). On the contrary, alternative weighting schemes seem not have relevant influence on wealth composition and distribution.

What are the implications of these results for the next steps towards LWS_α?

The first one concerns wealth definition. LWS_β appears to limit excessively the coverage of household assets, all in the name of cross-country comparability. At least in the case of Italy, most of the non-financial assets excluded (e.g. business equity, valuables, etc.) are of paramount importance in order to get a correct picture of household wealth. A better strategy to ensure cross-country comparability would be to analyse financial wealth (i.e. net financial assets), possibly augmented by information regarding principal residence.

A second point arises from the study of wealth patterns by household characteristics. In order to increase consistency of cross-country analysis it is sensible to switch to a common definition of head of household as main income earner (and check also that the income definition used to identify these subjects is comparable).

A final issue is related to the homogeneity of the estimators. Survey weights are basically aimed at providing unbiased population estimates. They contain information on both the selection and the response process. To be sure that cross-country survey estimates are comparable as much as possible, some sort of common calibration could be pursued in order to produce a set of LWS survey weights. It would be ideal to have a common non-response adjustment similar to $SHIW_{NR}$. A second-best option, more easy to implement, could be a common post-stratification strategy. In this

case each vector of national survey weights would be calibrated to a common set of auxiliary information (ideally directly provided, together with survey data, by the LWS partners)[16].

[16] Other ideas for further developments of LWS could be a common set of procedures for imputation and for estimating sampling variance.

Appendix A - Statistical tables

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Table A1.

HEAD OF HOUSEHOLD CHARACTERISTICS, ITALY 2002

(percentages)

	LWS (1)	$SHIW_{HD}$ (2)	$SHIW_{PS}$ (3)	$SHIW_{NR}$ (4)
Age				
Up to 30 years	4.0	6.4	7.5	8.6
From 31 to 40 years	18.4	20.4	21.2	21.8
From 41 to 50 years	20.2	20.8	18.3	19.9
From 51 to 65 years	26.3	23.5	24.7	20.7
More than 65 years	31.1	29.0	28.4	28.9
Sex				
Male	63.4	70.4	70.8	70.7
Female	36.6	29.7	29.2	29.3
Marital status				
Married	64.9	61.4	63.0	61.4
Never married	11.8	17.5	16.9	18.9
Separated/divorced	5.5	5.0	4.7	4.3
Widowed	17.8	16.1	15.5	15.4
Education				
None	7.7	7.2	6.9	6.9
Elementary school	28.5	25.3	25.3	22.9
Middle school	27.2	27.6	28.0	25.8
High school	28.6	30.6	30.5	32.4
Bachelor's Degree	7.8	9.1	9.0	11.7
Post-graduate	0.2	0.2	0.3	0.3
Labour-force status				
Employee	33.5	41.6	41.9	43.0
Self-employed	15.6	17.6	17.8	18.0
First job-seeker	0.5	0.2	0.2	0.2
House wife	7.0	1.4	1.4	1.3
Rentier	0.1	0.0	0.0	0.0
Pensioner	40.6	37.7	37.3	36.4
Unemployed	2.5	1.2	1.1	0.9
Student	0.4	0.2	0.2	0.2
Other not employed	0.0	0.0	0.0	0.0
Occupation status				
Blue-collar worker or similar	15.4	19.0	19.3	18.3
Office worker or school teacher	14.6	18.0	18.0	19.5
Junior manager/cadre	2.2	3.2	3.2	3.5
Manager, senior official	1.3	1.5	1.5	1.7
Member of the arts or professions	3.8	4.5	4.4	5.1
Sole proprietor	1.7	1.8	1.7	1.8
Freelance	6.6	7.6	7.7	7.4
Owner or member of family business	2.0	2.1	2.2	2.0
Active shareholder/partner	1.4	1.7	1.7	1.8
Not employed	50.9	40.8	40.3	39.0
Total	**100.0**	**100.0**	**100.0**	**100.0**

Table A2.

HOUSEHOLD ASSET PARTICIPATION, ITALY 2002

(*percentages*)

	LWS (1)	$SHIW_{HD}$ (2)	$SHIW_{PS}$ (3)	$SHIW_{NR}$ (4)
Percentage of households owning				
Financial assets	81.2	81.2	81.6	84.3
Non-financial assets	72.2	95.6	95.7	96.1
Financial liabilities	19.9	19.2	19.3	19.5
Negative wealth	2.7	1.7	1.6	1.5
Percentage of households not owning				
Financial assets	18.8	18.8	18.4	15.8
Non-financial assets	27.8	4.4	4.3	3.9
Financial liabilities	80.1	80.8	80.7	80.5
Negative wealth	97.3	98.4	98.4	98.5

Table A3.

HOUSEHOLD WEALTH, ITALY 2002

(*average 2002 €*)

Age of the head of household	Financial assets	Non-financial assets	Financial liabilities	Total wealth
(1) **LWS**				
Up to 30 years	9,592	69,050	7,731	70,911
From 31 to 40 years	18,040	106,001	7,981	116,061
From 41 to 50 years	19,835	141,573	8,184	153,224
From 51 to 65 years	30,336	179,507	3,162	206,681
More than 65 years	25,701	118,585	432	143,861
Total	**23,678**	**134,955**	**4,398**	**154,237**
(2) **$SHIW_{HD}$**				
Up to 30 years	13,966	147,862	4,833	156,995
From 31 to 40 years	19,228	142,416	7,380	154,264
From 41 to 50 years	22,743	184,234	8,082	198,895
From 51 to 65 years	31,152	229,955	3,070	258,037
More than 65 years	23,819	125,482	334	148,966
Total	**23,753**	**167,118**	**4,309**	**186,563**
(3) **$SHIW_{PS}$**				
Up to 30 years	13,630	141,593	5,031	150,192
From 31 to 40 years	18,837	143,613	7,428	155,021
From 41 to 50 years	22,800	189,367	8,332	203,834
From 51 to 65 years	31,803	232,774	3,181	261,395
More than 65 years	24,292	126,821	358	150,755
Total	**23,922**	**169,058**	**4,360**	**188,620**
(4) **$SHIW_{NR}$**				
Up to 30 years	16,059	169,241	4,646	180,654
From 31 to 40 years	21,476	152,104	7,824	165,756
From 41 to 50 years	26,336	200,211	8,539	218,008
From 51 to 65 years	37,318	253,445	3,191	287,573
More than 65 years	29,027	138,701	353	167,375
Total	**27,444**	**180,298**	**4,572**	**203,169**

Table A4.

WEALTH COMPOSITION, ITALY 2002

(*percentages*)

Age of the head of household	Financial assets	Non-financial assets	Financial liabilities	Total wealth
(1) **LWS**				
Up to 30 years	13.5	97.4	-10.9	100.0
From 31 to 40 years	15.5	91.3	-6.9	100.0
From 41 to 50 years	12.9	92.4	-5.3	100.0
From 51 to 65 years	14.7	86.9	-1.5	100.0
More than 65 years	17.9	82.4	-0.3	100.0
Total	**15.3**	**87.1**	**-2.8**	**100.0**
(2) **SHIW$_{HD}$**				
Up to 30 years	8.9	94.2	-3.1	100.0
From 31 to 40 years	12.5	92.3	-4.8	100.0
From 41 to 50 years	11.4	92.6	-4.1	100.0
From 51 to 65 years	12.1	89.1	-1.2	100.0
More than 65 years	16.0	84.2	-0.2	100.0
Total	**12.8**	**89.9**	**-2.3**	**100.0**
(3) **SHIW$_{PS}$**				
Up to 30 years	9.1	94.3	-3.3	100.0
From 31 to 40 years	12.2	92.6	-4.8	100.0
From 41 to 50 years	11.2	92.9	-4.1	100.0
From 51 to 65 years	12.2	89.1	-1.2	100.0
More than 65 years	16.1	84.1	-0.2	100.0
Total	**12.7**	**89.4**	**-2.3**	**100.0**
(4) **SHIW$_{NR}$**				
Up to 30 years	8.9	93.7	-2.6	100.0
From 31 to 40 years	13.0	91.8	-4.7	100.0
From 41 to 50 years	12.1	91.8	-3.9	100.0
From 51 to 65 years	13.0	88.1	-1.1	100.0
More than 65 years	17.3	82.9	-0.2	100.0
Total	**13.5**	**88.3**	**-2.2**	**100.0**

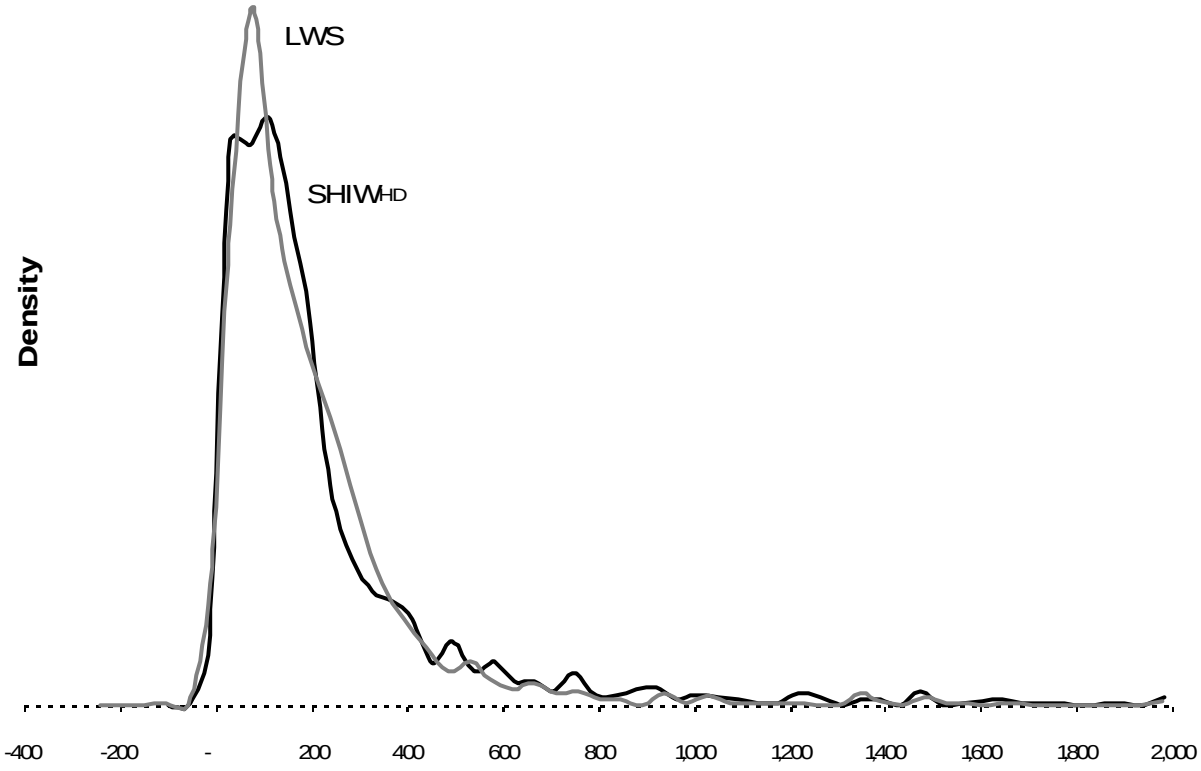
Table A5.

HOUSEHOLD WEALTH DISTRIBUTION, ITALY 2002

	LWS (1)	$SHIW_{HD}$ (2)	$SHIW_{PS}$ (3)	$SHIW_{NR}$ (4)
Percentiles ratio (P75/P25)				
Net Wealth	9.9	9.8	8.3	9.9
Financial assets	13.2	13.3	10.8	13.2
Non-financial assets	25.3	24.8	13.4	25.3
Gini index				
Net Wealth	0.621	0.621	0.617	0.621
Financial assets	0.767	0.766	0.766	0.767
Non-financial assets	0.624	0.623	0.618	0.624

Figure A1.

HOUSEHOLD WEALTH DISTRIBUTION, ITALY 2002
(*density estimate*[*], *'000 €*)



[*] Non parametric estimation techniques implemented using `kdensity` command in STATA 9.1. Households with a net wealth up to € 2 million. Epanechnicov function is used as kernel and bandwith is selected following a criterion that approximately minimise the asymptotic mean integrated square error (AMISE).