WEALTH AND ITS RETURNS: ECONOMIC INEQUALITY IN ITALY, 1995-2014

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PRELIMINARY AND INCOMPLETE: PLEASE DO NOT QUOTE

Abstract

This paper describes the dynamic of economic inequality in Italy in the last two decades by focusing on a composite measure that combines both income and wealth. The trend of inequality could be altered by the errors that inevitability affect sample surveys (non-response and measurement errors). This paper tries to assess the impact of those issues on the measurement of inequality, with a special attention to capital incomes which are particularly difficult to measure in sample surveys. Results with adjusted data highlight a higher level of inequality in all considered periods for both wealth and income. Yet, adjusted data show dynamics that are fairly in line with those observed in the original data. There is evidence that inequality in capital income is decreasing over time.

Summary

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1. Introduction[1]

Until recently research on economic inequality was mainly focused on the distribution of households' income (Atkinson and Bourguignon, 2000). Wealth entered the picture mostly through its returns. However, concerns that households welfare is more and more driven by wealth have mounted: weak economic growth, even weaker developments of average labour incomes and increasing wage inequality appear to have increased the role of assets relative to labour in shaping households' welfare. As a consequence, the process of wealth accumulation and wealth inequality has received greater attention (Davies *et al.*, 2011; Piketty, 2014; OECD, 2015). However, limiting one's analysis to either one of income and wealth offers at best a partial view on households' welfare, its distribution and its developments: just like unspent income is added to ones' wealth, assets can be dissaved and transformed into consumption. A suitable measure of a household's welfare should thus simultaneously account for both its income and its wealth. This is especially relevant in Italy, where households' wealth has historically played a major role in shaping households fortunes. Between 1991 and 2012 the ratio between households' net wealth and disposable income went from around 5 to 8, falling back to 7.15 by 2014.[2]

To study the evolution on households' welfare inequality in Italy, simultaneously accounting for both income and wealth developments, we focus on the composite income net worth indicator (Weisbrod and Hansen, 1968). Specifically, this measure combines current household income with the annuity value of its net wealth. Yet, while conceptually appealing, such measurement strategy faces a number of difficulties. First, suitable assumptions on how to transform current household wealth into a flow of annuities must be selected. Second, one has to deal with the challenges that inevitably arise when using survey data that jointly provide information on income, assets and liabilities: in particular, if not properly accounted for, measurement errors, non-random non-response and under-reporting may seriously affect the conclusions on studies of higher moments of the distribution of

[1] The authors wish to thank Andrea Brandolini, Giovanni D'Alessio and Alfonso Rosolia for helpful comments. The views expressed are those of the authors and do not necessarily reflect those of the Bank of Italy.

[2] On the evolution in total household wealth in Italy since 1965 see D'Alessio (2012).

income, of wealth and of the income net worth indicator. These issue are likely to be more relevant for wealth than for income. Previous studies based on the SHIW survey have highlighted quality issues in particular relating financial capital (Neri and Ranalli, 2011) and secondary houses (Neri and Monteduro, 2013). These issues are likely to affect the estimation of the composite indicator through two main channels. The first one is through capital returns (imputed and effective rents, net financial incomes). The second channel consists in the fact the household wealth enters directly in the composite indicator (in form of annuities).

So far little attention has been devoted to the effects of these issues on the role of wealth and its returns in the evolution of economic inequality[3]. The objective of this paper is to try to fill this gap, by estimating alternative measures of inequality after accounting for measurement issues. In particular, we use some adjustment methods described in D'Alessio and Neri (2014) in order to reconstruct a counterfactual dynamic of economic inequality that would hold in absence of quality issues. Our investigation draws on the Italian Survey on Household Income and Wealth (SHIW) conducted by the Bank of Italy (Brandolini and Cannari, 1994).

The paper is organized as follows: Section 2 presents the data used and some stylized facts about inequality trends for income and wealth, the two components of the composite estimator. Section 3 examines the use of income net worth as a measure of the overall economic situation and presents results using this indicator. Section 4 discusses the problem of under-reporting in the SHIW and in particular with respect to wealth and its returns and provides a comprehensive approach to adjust income and wealth. Section 5 discusses the effect on income net-worth inequality of the proposed corrections with special reference to the role of wealth and capital incomes. Section 6 reports the main conclusions.

[3] Brandolini et al. (2004) have used a similar approach, but with a different methodology in the adjustment of the data, to investigate households wealth distribution in the 1990s.

2. The Survey on Household Income and Wealth and inequality trends in Italy

The Bank of Italy has conducted the SHIW since 1962 to collect information about the economic situation of Italian households (sources of income and accumulated wealth) together with socio-demographic characteristics of individuals within the household. The survey has been conducted on a yearly basis up to 1987 and every two years since then. The sample is of about 8,000 households representative of the Italian population.[4]

The amount of information collected has increased over the years and has been integrated with specific topics only collected for one wave (about social capital, capital gains, financial information, inheritance, and so on). With respect to income and wealth, information has been collected with a greater detail in recent years. In particular, financial wealth and its returns have been collected since 1987, while households' financial liabilities since the 1991 survey. In the period considered in our analysis (1995-2014) income and wealth definitions have remained substantially stable.[5]

Using data form the SHIW we can analyse inequality trends for income and wealth in the last two decades[6]. The concentration of income in the last twenty years has had a cyclical pattern: growing between 1995 and 1998, it is then reduced until 2006 growing again until 2012. In 2014, the figure is slightly lower than that of 2012 (specifically 35.0 in 2014 and 35.7 percent in 2012). Among the various income components, self-employment income shows the higher level of concentration over the considered period. The distribution of capital returns is less unequal and its concentration has declined over time. This result is linked to the growing diffusion of home ownership in Italy during the period considered and therefore of income from real-estates. Inequality of payroll income appears substantially stable, while there is a growing concentration of income generated from transfers and pensions (Figure 1). The percentage composition in net disposable income had undergone

[4] The sample is obtained using a two stage stratified sample design. In the first stage, municipalities are selected and in the second, households. For more details regarding the sample design, see the methodological note in Bank of Italy (2015).

[5] In order to avoid minor differences in aggregate definitions, this paper uses data from the historical database which provides harmonised data to account for the changes that have regarded the questionnaire over time.

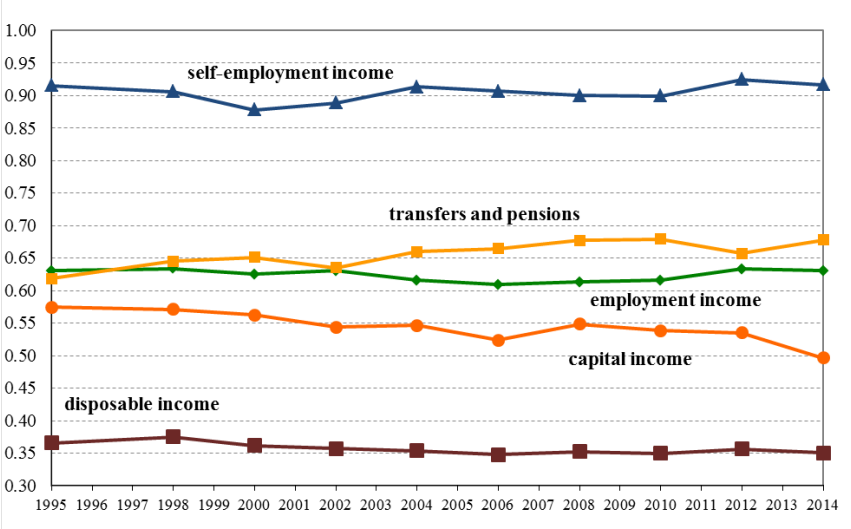
[6] In what follows we will refer to the Gini index as a measure of inequality. Nevertheless results have been validated also using other inequality indexes such as Theil and Atkinson indexes.

only minor changes during the last two decades. Payroll income which represents the largest share, stayed stable at around 40 per cent of net disposable income; the share of transfers and pensions raised from 24.5% in 1995 to 27.5% in 2014; capital income and self-employment income slightly declined (from 22.4 per cent in 1995 to 20.7 per cent in 2014 the former and from 12.6 per cent in 1995 to 11.5 per cent in 2014 the latter, table A1[7]).

Fig. 1

Gini index of net disposable income and its components

(1995-2014)



Source: authors estimates on SHIW Historical Database (Version 9.0)

Net wealth is much more concentrated than income. In 2014 we observe a change in the increasing inequality trend detected starting from 2004 with a reduction in the concentration of wealth more pronounced than that observed for income, which brought back the value of inequality to those of the beginning of the investigated period. In particular, in 2014 the Gini index fell by 3 percentage points compared to the figure recorded in the previous survey (64.3 on 2012 and 61.3 per cent in 2014)[8]. Considering the

[7] Gini index decompositions are based on the method proposed by Brandolini *et al.* (2004).

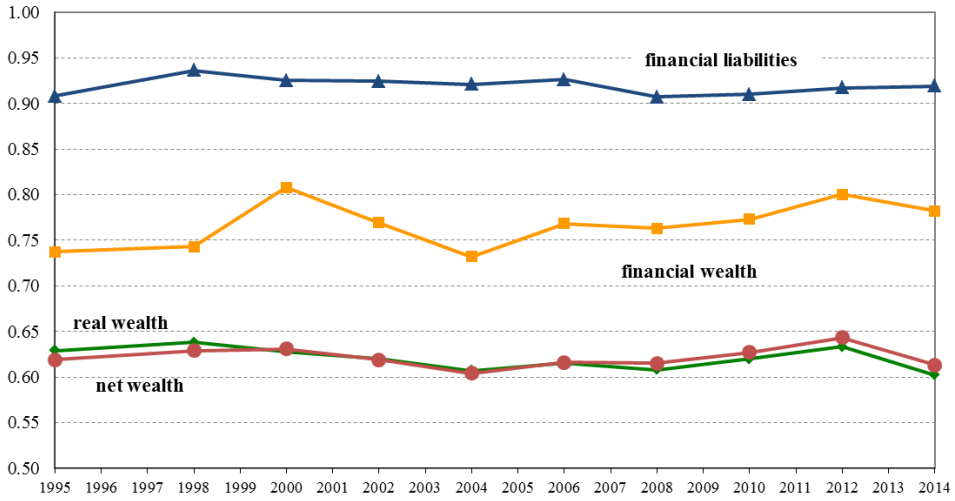
[8] This result is also confirmed by other indicators: the share of net wealth of Italian families owned by the richest 10 per cent of households has fallen by over 3 percentage points (from 46.9 in 2012 to 43.6 percent in 2014) while, in the same period, has passed from 8 to 9.3 percent the share of wealth held by the poorer 50 per cent of Italian families. The reduction in inequality is also confirmed using winsorized data (obtained removing the lower and the higher percentile from the distribution of wealth).

decomposition of wealth in its main components (real assets, financial assets and financial liabilities) the major level of inequality is observed for liabilities, due to their scarce diffusion among Italian families. This latter component is the only which does not point to the reduction the Gini index in the last two years. Real assets are more equally distributed and its distribution is substantially in line with that of net wealth itself because of the preponderant share of this component. In the last two decades the percentage share of financial assets on overall wealth fall by 3 percentage points while we observe an increase in its concentration (figure 2, table A2).

Fig. 2

Gini index of net wealth and its components

(1995-2014)



Source: authors estimates on SHIW Historical Database (Version 9.0)

3. Income net worth measure and economic inequality

Measurement of economic well-being should include not only income, but also wealth, which provides insurance against income risks and allows households to smooth consumption. This aspect is particularly important in Italy, where household wealth has grown considerably and faster than income in the last decades. In particular, the ratio between households' net wealth and their disposable income increased from 6 in 1995 to 7.15 in 2014. The role of precautionary savings is also enhanced by the augmented instability of working conditions and by the worsening of the expectations on the level of

pension endowments. To account for both this factors in a unique indicator we refer to the composite income net-worth measure, firstly introduced by Weisbrod and Hansen (1968) where net wealth is converted into a stream of constant annuity and added to the income used to evaluate the household overall economic situation. In particular, we can define income net-worth (*YW*) as the sum of the equivalent income *Y* and the annuity associated with net equivalent wealth *W*: [9]

$$YW = Y_t + \left(\frac{r(1+r)^n}{(1+r)^n - 1} \right) W_t \qquad (1)$$

where *r* is the discount rate used to convert wealth into annuities and *n* is the length of the life expectancy.

One of the main drawbacks of this indicator is to be strongly affected by the age profile. Indeed older people will have both a shorter life expectancy and higher accumulated wealth than younger people, making them in general better-off. It also adopts strong assumptions, such as the fact that individuals may consume completely their assets, including house equity, which are harder to convert into cash with respect to financial assets, especially in Italy where there are still few financial instruments to achieve this result. Finally, it assumes that no bequests are left at time of death. This latter result is in contrast with the empirical observation of the presence of inheritances and of its importance on wealth accumulation.[10] Nevertheless the presence of inheritance can be compatible with the assumption of the absence of bequest intention and may be simply attributable to uncertainty about the age of death (Hurd, 1989). Another reason for the elderly to hold wealth in bequeathable forms is to trade inheritance in return of care (Bernheim *et al.*, 1985).

Nevertheless several authors advocate the use of this the composite income-net worth indicator. Rendall and Speare (1993), using a complex model able to generate both income net-worth and income only measures, conclude that the correct measure to use is the former

[9] Income and wealth have been converted in equivalent terms to account for differences in the size and the composition of the households that may have occurred over time. We have used the modified OECD scale which assigns a value of one to the first adult in the household, 0.5 to every subsequent adult, with children receiving a weight of 0.3 (OECD, 1982).

[10] According to Cannari and D'Alessio (2008) inheritance and gifts account from 30 to 55 per cent of net wealth in Italy and its importance is increasing over time.

even if it is less parsimonious in terms of parameters to be defined. Furthermore, including wealth in the measurement of poverty provides a more comprehensive measure of the overall economic situation of the households which may affect comparison among countries or socio-economic groups (Brandolini *et al.*, 2010; Azpitarte, 2012; Müller and Schmidt, 2015). Drawing from these considerations in what follows we will refer to this indicator to study economic inequality.

In practice the estimation of this indicator requires the formulation of assumptions regarding both the level of the interest rate (*r*) and the choice of the individual to which refer the life expectancy (*n*). With respect to the latter, it is worth noticing that, as wealth is defined at households' level, there are different choices that can be adopted to choose life expectancy within each family. Most of the authors use either the life expectancy of the head of the household or a combination with that of its spouse, while discount rates usually range from to 2 to 6 per cent.[11] In our estimates we have chosen to use the life expectancy of the major income earner within the family and a discount rate equal to two percent.

If one considers this indicator, levels of inequality are higher, mainly because of the influence of the component attributable to wealth, which is more concentrated than income. For the annuity component, similarly to what found for wealth, results shows a sharper increase in inequality from 2004 to 2012 and a more pronounced reduction in the last survey (Fig. 3). Although overall inequality in wealth hasn't increased in the period considered the gap between inequality in disposable income and in the income net worth measure has widened over time. This result is associated to the evolution in the distribution of the annuity of wealth, for which inequality has increased of almost 3 percentage points in the last decade. This outcome reflects also two demographic changes capable of increasing the level of concentration of the annuity: the reduction in the size of the households and of the progressive ageing of the population. In particular, in the last two decades the average size of the households dropped from 2.88 to 2.46 components, while the average age increased from 52.4 to 56.7 years old.

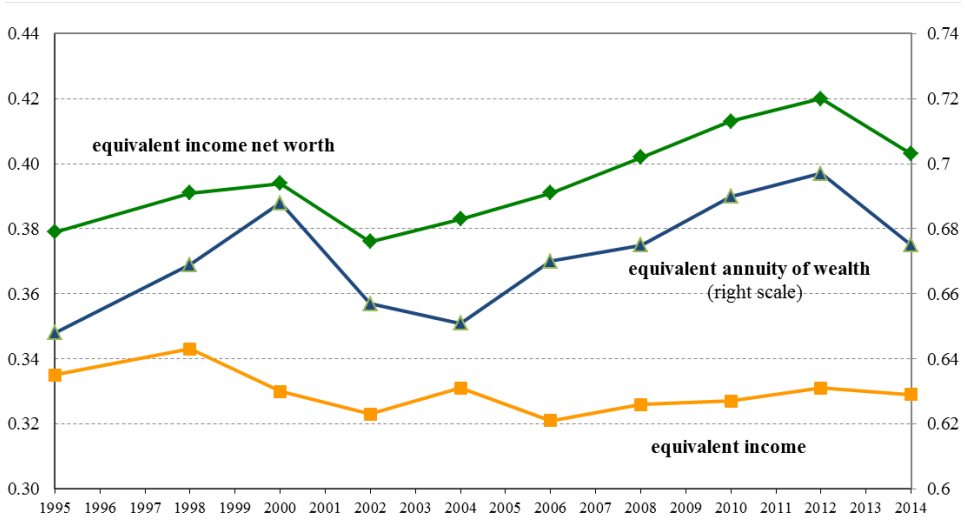
[11] For a review of different assumptions used in the calculation of the income net-worth measure see Brandolini *et al.* 2010.

The decomposition of income net worth inequality by components (table A3) highlights the importance of wealth and its returns in explaining economic inequality. Firstly the percentage contribution of wealth (through the annuity) and its returns on income net worth inequality is large and ranges from 58 to 62 per cent in the observed period. The share of these two components in income net worth is also relevant and equal to about 15 per cent for capital returns and 30 per cent for the annuity. Secondly, in the overall period we observe an increase in income net worth inequality of 2.4 percentage points, mainly attributable to rise in the concentration of the annuity of wealth partially overcome by the reduction in the concentration of capital returns.

Fig. 3

Gini index of equivalent income net worth and its components

(1995-2014)



Source: authors estimates on SHIW Historical Database (Version 9.0)

4.The measurement of wealth and its returns

The level of observed inequality and its dynamics described in the previous sections, may be affected by measurement issues regarding both wealth and its returns (imputed rents, effective rents and net financial income such as interests paid and received or dividends).

To better understand the underlying mechanisms, it may be useful to briefly describe the way wealth and capital income are measured.

As to real wealth, households are asked to report all the properties they own (such as dwellings, land and other buildings). For each property they are asked a set of follow up questions about their main characteristics (location, use, square meters,..). Respondents are also asked to report how much they could gain in case of selling or renting the property (imputed rents). If the property is rented they are asked to report the amount they receive. The stock of wealth and its returns are therefore strictly related. In case one property is not declared during the interview, both the value of the property and the income flow it produces will be missing. Moreover, when present, both are based on the respondents' subjective measurement.

A similar approach is used for collecting information on financial wealth. The households are asked to report the different forms of assets with the corresponding values (using the unfolding bracket approach) for a set of different instruments (deposits, government bonds, shares, mutual funds,..). The financial incomes are not instead directly asked to respondents. This choice is based also on the results of some experiments showing the low quality of the responses to such direct questions about interests received and paid, dividends, realised capital gains. Financial income is therefore estimated by applying average market rate returns to the stocks.[12] Any error affecting the estimation of stocks will therefore directly result in an error on the capital income.

Such measurements are potentially affected by several sources of errors.

A first issue relates to the difficulty of the survey in representing the households at the extremes of the income (wealth) distribution. The very rich are likely to be very difficult even to contact to negotiate an interview with and they may have less time to participate in the survey. The problem lies in the fact that these families are likely to own large shares of income or wealth. On the other side, the poorest people are difficult to interview since they are mobile on the territory and because they are more likely to live in not-safe neighborhoods, which may be very difficult to reach for the interviewers. Those issues may be dealt with using external information about income and wealth at the design stage or at

[12] The returns used in the different waves may be different, mainly because the information available may change over time. To exclude this potential source of variability, in this paper we use a set of rates of returns that are based on the same source for all the years.

the estimation stage. The SHIW incorporates various procedures to limit the effects of non-participation (Bank of Italy, 2015). Yet, no information about the household economic situation is available at the design or at estimation stage while adjusting for nonresponse.[13]

Since non-response is more likely to happen at the tails of the distribution, it is likely to produce an underestimation of the level of inequality.

A second issue relates to the measurement errors that are likely to occur at the interviewing stage. Previous studies have found that the major problems relate the self-employment income, the reporting of secondary dwellings and the reporting of financial wealth (see for instance Neri and Zizza, 2010). Those issues may have a different impact on the levels of inequality.

In the case of dwellings, the errors mainly relate the under-reporting of the number of secondary properties. This is hardly surprising since the main residence is the place where usually the interview takes place. The first evidence of measurement issues came from consistency checks between some SHIW estimates (Cannari and D'Alessio, 1990). The number of dwellings that the owners declare they rent to other households can be compared with the number of tenants interviewed, i.e. those who say their home is owned by someone else (table 1).

Table 1

Houses declared by owners and renters, 1995-2012
(percentages)

Year	Tenant households (a)	Dwellings that owners report renting (b)	Share (b) / (a)
1995	3,360,512	1,533,344	45.6
1998	3,255,218	1,112,374	34.2
2000	3,182,180	1304,149	41.0
2002	2,970,913	978,709	32.9
2004	3,304,629	967,758	29.3
2006	3,360,706	861,826	25.6
2008	3,320,834	1,529,607	46.1
2010	3,646,078	1,205,595	33.1
2012	3,683,863	1,210,284	32.9
Average	-	-	35.8

Source: D'Alessio, Neri (2015)

[13] Neri and Ranalli (2011) develop a weight adjusted for non-response of households using the information available from the past survey for panel households, and the results from some follow-up surveys of non-respondents for non-panel households. They found that the bias due to non-response is outweighed by far by the bias due to measurement error, as far as financial wealth is concerned.

This under-reporting may reflect the reticence of respondents to report their real wealth or their desire to reduce the burden of the interview. Since survey data show that richer households tend to concentrate most of the real estate, the more likely effect of underreporting is to reduce the level inequality.

To adjust for such issues we use the method developed by Cannari and D'Alessio (1990). The method imputes the difference between the number of houses declared in SHIW and those resulting from the census, suitably interpolated for the years between censuses. The imputation model consists in using the unadjusted data to estimate the probability a household owns one or more dwellings as a function of various socio-demographics. These probabilities are used to distribute the missing dwellings.

The main difference with the mentioned paper is that in valuing the imputed houses, we also take into account respondents' tendency to overestimate their actual market value, ignoring the usual difference between the price asked by the seller and the price paid by the buyer. According to the survey of the housing market (Bank of Italy, 2014) this gap averages between 10 and 15 percent; we take 12 percent.

The effects of this procedure for the 2012 survey are summarized in table 2. The correction method increases the share of households in the top tail of the distribution and reduces the share of those who don't report any property. The average value of real wealth is increase by around 12 percent. The correction produces a slight increase in the level of inequality in real wealth (the Gini index moves from 0.633 to 0.636). Figure 4 shows the effects of the correction on the inequality of real estate wealth across different waves. The Gini indexes are fairly in line even if starting from 2004 the correction increases the level of inequality.

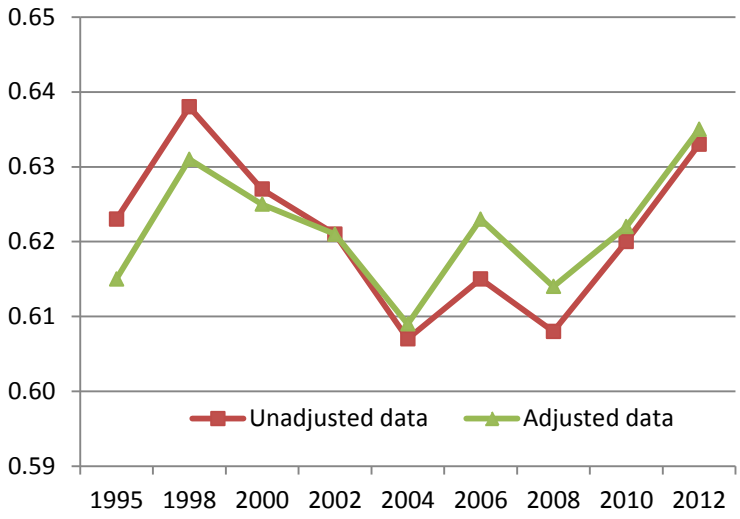
Table 2

Distribution of households by real estate wealth classes 2012
(percentages)

	SHIW initial values		SHIW imputed values	
Real estate (euro)	Share of households	Mean value	Share of households	Mean value
0.....	7,5	-	6,3	-
1-10,000	19,6	1.699	16,7	1.770
10,001-50,000	4,6	31.235	5,4	32.587
50,001-200,000	30,5	126.245	33,7	125.687
200,000-500,000 ...	27,2	299.996	26,2	313.913
>500,000	10,5	1.033.439	11,8	1.120.195
Total	100,0	230.402	100,0	258.124

Fig. 4

Real estate wealth: Gini index for unadjusted and adjusted data



As to financial wealth, the existence of measurement errors is studied in D'Aurizio et al. (2006), by comparing the 2004 SHIW data with those coming from an experiment done with a major Italian financial institution. The experiment consisted in a survey conducted among the bank customers. Survey data were then coupled with the administrative records held by the bank. The authors develop a two-step imputation procedure to adjust for mis-reporting. First, reticence is measured by comparing the customers' declarations with the real data on the stocks they held, as a function of the amounts declared and the socio-economic characteristics of households. Second, these estimated ratios are applied to the SHIW sample to obtain adjusted financial wealth for the entire population of Italian banking customers.

Table 3 describes the effects of the imputation by comparing the unadjusted and adjusted data with the corresponding figures resulting from Financial Accounts. The imputed household financial average assets are almost 3 times higher than original data. An important part of the effect is due to the imputation of new ownerships (step 1).

Under the assumption that the estimated coefficients remain unchanged across time, we use them to impute the household financial wealth in the other waves. The overall effect on financial wealth inequality is to reduce it (fig.5). The economic interpretation of this result is that the mechanisms behind measurement errors such as the reticence or the difficulty in recalling financial portfolios, are likely to affect all households and not only the very rich.

Table 3

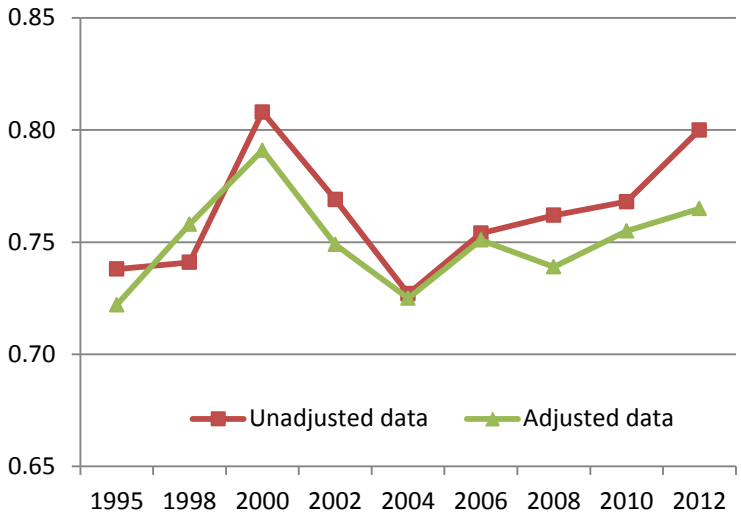
Comparison between the SHIW and the Italian National Financial accounts: 2002

Assets(*)	Starting values	Step 1	Final Step	National Financial accounts (**)
	Average amount ***(index. Financial accounts=100)***			*Billions of Euro*
Deposits and repos	55.5	55.5	76.5	421
Government bonds	28.7	31.3	57.4	213
Private bonds	11.2	38.4	103.1	382
Shares	31.1	51.2	59.6	131
Mutual funds	25.5	54.3	73.8	306
Total financial assets	**31.4**	**51.0**	**84.7**	**1.453**
Financial liabilities	46.6	61.0	64.9	290

(*) Financial accounts do not produce a separate figure for managed savings. The relative sample estimate has been accordingly attributed to the other assets, using external information on the portfolio composition of financial intermediaries (published in the Statistical Bulletin of the Bank of Italy). (**) The following assets are not included: Currencies. Insurance technical reserves and Postal deposits.
Step 1: adjustment for non-reporting; Final Step: adjustment for mis-reporting on amounts.
Source: D'Aurizio et al. (2006)

Fig. 5

Financial wealth: Gini index for unadjusted and adjusted data



In order to assess the effects of these statistical issues on inequality of our composite indicator we apply to survey data the corrections developed in previous studies and we repeat the analysis on the imputed data. The methodology is described in the recent paper by D'Alessio and Neri (2015). In the paper the authors present a methodology that combines all the previous studies in order to produce a set of adjusted microdata. The authors focus on the estimation of household income and wealth using a set of different estimators based on different assumptions.

In this paper we focus on two different estimators.

The first one (ADJ, thereafter) consists in using the adjusting microdata using the methods previously described: weighting for non-response, correction for underreporting on secondary dwellings and on financial wealth.

The second estimator imply a further calibration to national accounts. The basic idea is to manipulate the survey weights to make survey-based estimators as close as possible to the macro statistics (National Accounts, Financial Accounts) after aligning the two definitions as much as possible. To this purpose we use the figures published in Bank of Italy (2014) and in the National Accounts by institutional sector.

In particular, the estimator (ADJ_CAL, thereafter) calibrates the adjusted data on the to the total household wealth and to the totals of income from employment, income from transfers and income from self-employment. The estimator also includes the main demographics available for the National Institute (regarding age, gender, geographical area, size of the municipality) as constraints in the calibration. As a final step, we winsorize the final weights to the 1^{st} and 99^{th} percentile.

The difference between the two estimators enables us to disentangle the effect due to the imputation process from that due to the final calibration.

This exercise does not imply that macro statistics on income and wealth should be considered as a benchmark. First, they cannot be considered as error-free sources of information. The fact that there is hardly any study on data accuracy does not imply that this assumption holds true. Whenever there is a measurement process, there is often a measurement error. Second, even if one could fully harmonize the definitions there might be other differences that are difficult to reconcile such as measurement issues. Let's consider the financial accounts for instance. Bonci et al. (2005) use the average amount of revisions each single item is subject to, as a proxy of accuracy. They find that some items like deposits are reliable, while others like the shares held by households are subject to higher revisions. As a matter of fact, this item is estimated as a residual, after the figures for other sectors are estimated. Therefore, the estimate of the share held by households is subject to all the errors of the other estimations.

Yet the alignment could provide valuable information. We use this method as a robustness check to assess the impacts on the levels of inequality.

It is worth stressing that none of the adjustment methods described are used by the Bank of Italy for producing adjusted statistics in official publications. As already mentioned all the adjustment methods are based on many assumptions and they usually require a statistical matching exercise. Moreover, some of the adjustment methods are based on one-off experiments that are difficult to repeat on a regularly bases and that are therefore used to impute other surveys across time. Finally, some of the reasons why the calibration to macro statistics is not recommended have been previously discussed.

5. Inequality using imputed data

In section 3 we have found increase in inequality when using the composite income net worth indicator, mainly due to the rise in inequality of the annuity component. The aim of this section is to compare these results with inequality measured with data adjusted using the methodology illustrated in the previous section.

As a robustness check we use the imputed data to compute a wide range of inequality measures. Yet, for sake of simplicity we refer mainly to the Gini index.

As already mentioned, our aim is not to use adjusted data as a benchmark but to reconstruct a counterfactual dynamic of economic inequality that would hold in absence of measurement errors. Furthermore for the reasons highlighted in the previous section results based on adjusted data should be interpreted with caution and only to provide further insights on the tendencies, more than as a precise indicator of the true value of economic inequality.

A first result is that economic inequality is in general higher when using imputed data. This result holds for all the different measures of inequality, for all the considered years and for all the adjustments (fig. 6).

The second result is that adjusted data confirm the increase in economic inequality in the considered period: the variation of Gini index between 1995 and 2012 is 4.1 percentage points with unadjusted data, 2.1 with adjusted data and 3.6 when adjusted data are also

calibrated. Analogously, imputed data also confirm the increase in the share of total income net worth held by the richest 10 percent (fig. 7).

Fig. 6

Gini index for unadjusted and adjusted data

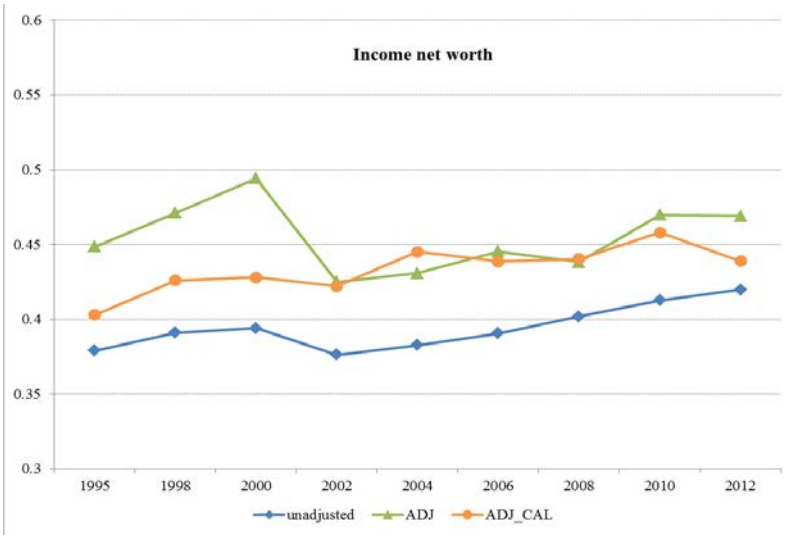
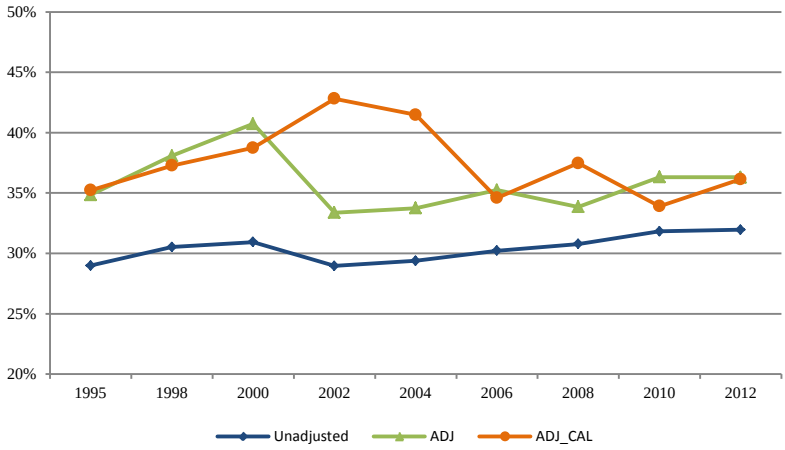


Fig. 7

Share of income net worth hold by richest 10 percent



Source: authors estimates on SHIW Historical Database (Version 9.0)

It is worth noting that the use of imputed data increases the variability of the estimates and this may result in greater fluctuations in the observed period. This result is in line with expectations since the imputed data are affected not only by the sampling variability (like the unadjusted data) but also by the variability due to the imputation process. Moreover, the

smaller the group of the population considered (such as the richest 10 percent), the higher the probability of observing great fluctuations. That said, when considering the whole population, the use of the calibrated estimator (ADJ_CAL) seems to assure more protection against this risk (fig. 6).

A third result is that the importance of wealth and its returns in explaining economic inequality is confirmed when using adjusted data. In particular, we observe that both the share of these two components on income net worth and the percentage contribution to income inequality are larger when using data adjusted with the first method (ADJ). In this case, the annuity accounts on average for about 38 per cent of income net worth and capital income for the 20 per cent (while for unadjusted data the figures are 29 and 15 respectively). When using the same adjustment, the share of inequality on average explained from these components rises to 75 per cent (while it is 62 per cent for unadjusted data). When using calibrated data (ADJ_CAL) the percentages returns to the same level observed for unadjusted data (Tables A4, A5).

As to the variations a forth result is that adjusted data confirms that the increase in income net worth inequality is mainly driven by the annuity component. With all the data, the share of this component on the household's income net worth is the larger among the income components and it increases in the 1995-2012 period (Table A6, fig.8). In the same period the inequality of the annuity grows, as a consequence of the increase in the level of wealth concentration (fig.8, 9).

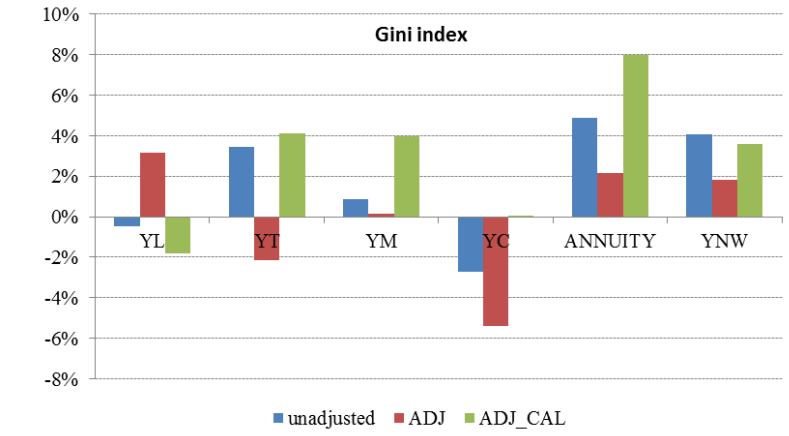
Finally also using adjusted data we find a decrease in the share attributable to capital income in the 1995-2012 period (Table A8, fig.8). At the same time also the inequality of this income component decreases (fig.8, 10). As a consequence capital income contributes to reduce the overall inequality.

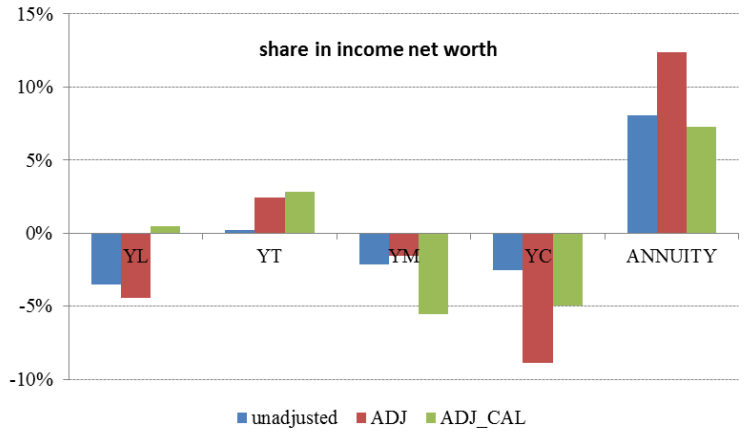
As for previous analysis, the use of imputed data is likely to amplify the fluctuations in the observed period and this is especially the case when estimators are computed for small populations (see for instance figures 9 and 10).

Fig. 8

Income net worth Gini index decomposition by factors

(1995-2012 variations, percentages)





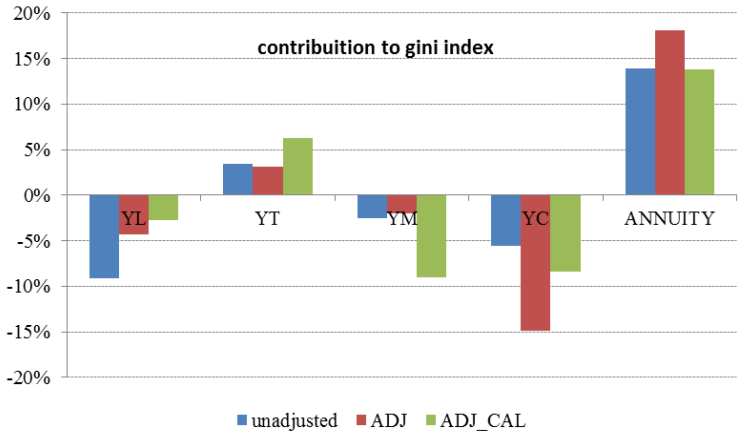


Fig. 9

Share of annuity held by richest 10 percent

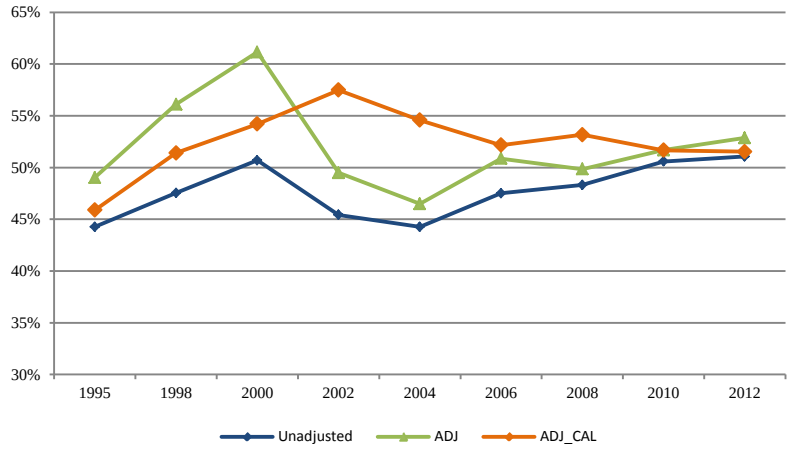
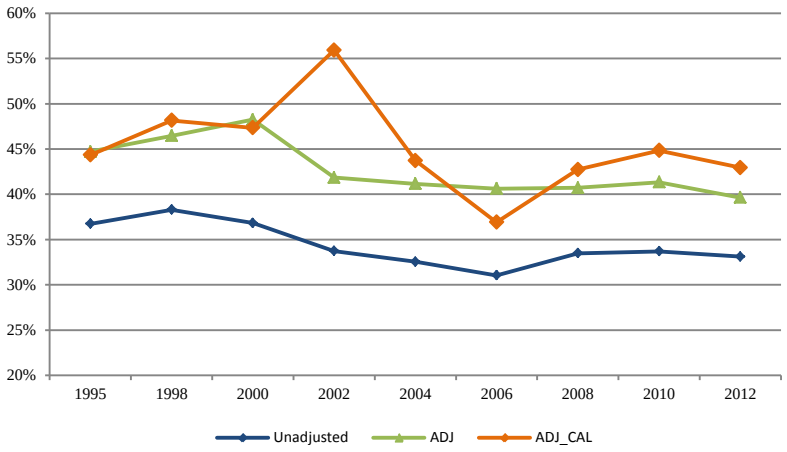


Fig. 10

Share of capital returns held by richest 10 percent



6.Conclusions

In this paper we provide some descriptive evidence on the dynamic of economic inequality among Italian households, using the SHIW survey. Since this dynamic could reflect statistical artefacts, we try to reconstruct some counterfactual dynamics that take into account statistical issues such as non-response and measurement errors.

A first finding is that not accounting for measurement errors leads in general to an underestimation of economic inequality. This result is likely to be driven by two main causes. The first one is that survey data may underrepresent households at the tails of the

income and wealth distribution. This represents a problem in particular for those at the top of the distribution which usually hold a large share of total income or wealth. A second cause, supported by empirical evidence, lies in the fact the rich households participating in the survey are more likely to underreport the secondary dwellings.

A second finding is that inequality based on a composite indicator that combines both income and wealth is increasing in the observed period. This result is mainly driven by one component: the increase in the level of wealth inequality that produces an increase in the inequality of the flow of annuities that it generates. The increase in wealth inequality is in turn due mainly to financial assets that have become more concentrated in the observed period.

We also find that the inequality of capital returns is decreasing over time. This result may be partially due to the reduction of the rate of return associated to deposits, government securities and bonds, which represent the larger share of financial assets for Italian households. Furthermore, the result of a decreasing level of inequality in capital returns associated with an increase of wealth concentration suggests the presence of a large role of capital gains in explaining the dynamic in wealth inequality. This result is in line to what reported by Cannari et al. (2008) which found, using Italian data in the period 1989-2004, that asset price variation explains at least one-third of wealth concentration dynamics and that the contribution of capital gains to per capita wealth variation was about 40 per cent in real terms.

A final finding is that, while survey data are likely to underestimate the inequality in a given year, they are able to capture the main trends over time. As a matter of fact, the use of imputed data supports most of the trends in economic inequality based on unadjusted data, at least in terms of variations between the beginning and the end of the period. One possible explanation is that the measurement issues (such as the reticence to report the actual household wealth) are likely not to change over time and thus they do not affect the overall trend of inequality.

Adjusted data also confirms the relevance of wealth and its returns in explaining economic inequality measured using the income net worth indicator. In the last two decades these two factors contributes on average from 60 to 75 per cent of the overall inequality.

There is an important caveat on the use of imputed data, however. The adjustment methods generally produce estimates with a greater variability compared to unadjusted data. Such variability usually makes more difficult to interpret the observed trends in inequality. In presence of unexpected variations it might be difficult to understand whether it reflects an economic phenomenon or whether it is merely a statistical artefact. The imputation relies on statistical assumptions which cannot always be tested. The use of calibration to National accounts seems to be a method that can be used to reduce such variability.

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Appendix A - Tables

Table A1

DECOMPOSITION OF GINI INDEX BY INCOME COMPONENTS

(unadjusted data)

Year	Income component	Percentage share in net disposable income	Gini index	Rank correlation ratio	Absolute contribution	Percentage contribution
1995	Payroll income	40.5	0.630	0.671	0.171	46.9
	Pensions and transfers	24.5	0.619	0.192	0.029	8.0
	Self-employment income	12.6	0.915	0.599	0.069	18.9
	Capital returns	22.4	0.575	0.747	0.096	26.3
	Net disposable income	100.0	0.366	1.000	0.366	100.0
1998	Payroll income	38.4	0.634	0.636	0.155	41.2
	Pensions and transfers	23.7	0.645	0.202	0.031	8.2
	Self-employment income	14.3	0.906	0.662	0.086	22.9
	Capital returns	23.6	0.572	0.768	0.104	27.6
	Net disposable income	100.0	0.375	1.000	0.375	100.0
2000	Payroll income	39.9	0.625	0.642	0.160	44.3
	Pensions and transfers	23.5	0.651	0.178	0.027	7.5
	Self-employment income	14.6	0.878	0.630	0.080	22.2
	Capital returns	22.1	0.563	0.757	0.094	26.0
	Net disposable income	100.0	0.362	1.000	0.362	100.0
2002	Payroll income	39.5	0.631	0.622	0.155	43.4
	Pensions and transfers	24.6	0.635	0.181	0.028	7.9
	Self-employment income	15.1	0.889	0.684	0.092	25.8
	Capital returns	20.8	0.544	0.723	0.082	22.9
	Net disposable income	100.0	0.357	1.000	0.357	100.0
2004	Payroll income	40.5	0.616	0.606	0.151	42.7
	Pensions and transfers	23.9	0.660	0.169	0.027	7.5
	Self-employment income	15.2	0.914	0.701	0.098	27.6
	Capital returns	20.4	0.547	0.703	0.078	22.2
	Net disposable income	100.0	0.354	1.000	0.354	100.0
2006	Payroll income	40.9	0.609	0.601	0.150	43.1
	Pensions and transfers	23.7	0.665	0.174	0.027	7.9
	Self-employment income	15.0	0.907	0.706	0.096	27.7
	Capital returns	20.4	0.524	0.695	0.074	21.3
	Net disposable income	100.0	0.348	1.000	0.348	100.0
2008	Payroll income	40.5	0.613	0.566	0.140	39.8
	Pensions and transfers	25.4	0.677	0.290	0.050	14.1
	Self-employment income	13.0	0.900	0.666	0.078	22.1
	Capital returns	21.2	0.548	0.728	0.085	24.0
	Net disposable income	100.0	0.353	1.000	0.353	100.0
2010	Payroll income	39.9	0.616	0.571	0.141	40.2
	Pensions and transfers	25.3	0.679	0.256	0.044	12.5
	Self-employment income	12.7	0.900	0.665	0.076	21.8
	Capital returns	22.1	0.539	0.751	0.089	25.5
	Net disposable income	100.0	0.350	1.000	0.350	100.0
2012	Payroll income	40.0	0.633	0.595	0.151	42.3
	Pensions and transfers	27.7	0.658	0.297	0.054	15.2
	Self-employment income	10.8	0.925	0.665	0.066	18.6
	Capital returns	21.5	0.535	0.743	0.085	24.0
	Net disposable income	100.0	0.357	1.000	0.357	100.0
2014	Payroll income	40.4	0.631	0.595	0.151	43.2
	Pensions and transfers	27.5	0.678	0.308	0.057	16.4
	Self-employment income	11.5	0.917	0.645	0.068	19.4
	Capital returns	20.7	0.497	0.714	0.073	20.9
	Net disposable income	100.0	0.350	1.000	0.350	100.0

Table A2

DECOMPOSITION OF GINI INDEX BY WEALTH COMPONENTS

(unadjusted data)

Year	Wealth component	Percentage share in net worth	Gini index	Rank correlation ratio	Absolute contribution	Percentage contribution
1995	Real assets	90.2	0.629	0.983	0.558	90.1
	Financial assets	13.7	0.737	0.746	0.075	12.2
	Financial liabilities	3.9	0.908	0.402	0.014	2.3
	Net Worth	100.0	0.619	1.000	0.619	100.0
1998	Real assets	87.7	0.638	0.981	0.549	87.3
	Financial assets	16.1	0.743	0.797	0.095	15.2
	Financial liabilities	3.9	0.936	0.440	0.016	2.5
	Net Worth	100.0	0.629	1.000	0.629	100.0
2000	Real assets	86.3	0.628	0.977	0.529	83.9
	Financial assets	17.4	0.808	0.829	0.116	18.5
	Financial liabilities	3.7	0.925	0.436	0.015	2.4
	Net Worth	100.0	0.631	1.000	0.631	100.0
2002	Real assets	89.6	0.620	0.980	0.544	88.0
	Financial assets	13.9	0.769	0.788	0.084	13.6
	Financial liabilities	3.5	0.924	0.299	0.010	1.6
	Net Worth	100.0	0.619	1.000	0.619	100.0
2004	Real assets	93.8	0.608	0.984	0.561	92.8
	Financial assets	10.6	0.732	0.725	0.056	9.3
	Financial liabilities	4.3	0.921	0.311	0.012	2.1
	Net Worth	100.0	0.604	1.000	0.604	100.0
2006	Real assets	93.3	0.615	0.981	0.563	91.5
	Financial assets	11.2	0.768	0.753	0.065	10.5
	Financial liabilities	4.5	0.926	0.290	0.012	2.0
	Net Worth	100.0	0.616	1.000	0.616	100.0
2008	Real assets	94.9	0.608	0.983	0.568	92.3
	Financial assets	9.8	0.763	0.754	0.056	9.1
	Financial liabilities	4.7	0.907	0.215	0.009	1.5
	Net Worth	100.0	0.615	1.000	0.615	100.0
2010	Real assets	94.4	0.620	0.982	0.574	91.5
	Financial assets	10.4	0.773	0.774	0.062	9.9
	Financial liabilities	4.8	0.910	0.210	0.009	1.4
	Net Worth	100.0	0.627	1.000	0.627	100.0
2012	Real assets	95.1	0.633	0.981	0.590	91.7
	Financial assets	10.4	0.800	0.775	0.065	10.0
	Financial liabilities	5.5	0.917	0.220	0.011	1.7
	Net Worth	100.0	0.644	1.000	0.644	100.0
2014	Real assets	92.8	0.602	0.978	0.546	89.2
	Financial assets	11.9	0.782	0.777	0.072	11.8
	Financial liabilities	4.7	0.919	0.130	0.006	0.9
	Net Worth	100.0	0.613	1.000	0.613	100.0

Table A3

DECOMPOSITION OF GINI INDEX BY INCOME NET WORTH COMPONENTS

(equivalent terms, unadjusted data)

Year	Income net worth component	Percentage share in Income net worth	Gini index	Rank correlation ratio	Absolute contribution	Percentage contribution
1995	Payroll income	31.8	0.567	0.397	0.072	18.9
	Pensions and transfers	16.7	0.685	0.365	0.042	11.0
	Self-employment income	9.9	0.895	0.506	0.045	11.8
	Capital returns	16.5	0.573	0.836	0.079	20.8
	Wealth annuity	25.1	0.648	0.873	0.142	37.5
	Income net worth	100.0	0.379	1.000	0.379	100.0
1998	Payroll income	30.2	0.567	0.356	0.061	15.6
	Pensions and transfers	16.1	0.705	0.359	0.041	10.4
	Self-employment income	11.2	0.886	0.567	0.056	14.4
	Capital returns	17.1	0.574	0.855	0.084	21.5
	Wealth annuity	25.3	0.669	0.880	0.149	38.1
	Income net worth	100.0	0.391	1.000	0.391	100.0
2000	Payroll income	30.5	0.561	0.351	0.060	15.2
	Pensions and transfers	15.6	0.714	0.377	0.042	10.6
	Self-employment income	11.1	0.856	0.519	0.049	12.5
	Capital returns	15.6	0.568	0.852	0.076	19.2
	Wealth annuity	27.2	0.688	0.894	0.167	42.4
	Income net worth	100.0	0.394	1.000	0.394	100.0
2002	Payroll income	30.4	0.564	0.310	0.053	14.1
	Pensions and transfers	16.3	0.700	0.383	0.044	11.6
	Self-employment income	11.7	0.865	0.565	0.057	15.2
	Capital returns	15.0	0.550	0.820	0.067	17.9
	Wealth annuity	26.6	0.657	0.884	0.155	41.1
	Income net worth	100.0	0.376	1.000	0.376	100.0
2004	Payroll income	30.6	0.560	0.296	0.051	13.2
	Pensions and transfers	15.8	0.719	0.392	0.044	11.6
	Self-employment income	11.6	0.896	0.606	0.063	16.4
	Capital returns	14.3	0.562	0.805	0.065	16.9
	Wealth annuity	27.7	0.651	0.885	0.160	41.8
	Income net worth	100.0	0.383	1.000	0.383	100.0
2006	Payroll income	30.1	0.547	0.283	0.047	11.9
	Pensions and transfers	15.1	0.724	0.410	0.045	11.4
	Self-employment income	11.1	0.889	0.582	0.058	14.7
	Capital returns	13.9	0.536	0.809	0.060	15.4
	Wealth annuity	29.8	0.670	0.908	0.182	46.5
	Income net worth	100.0	0.391	1.000	0.391	100.0
2008	Payroll income	29.3	0.546	0.233	0.037	9.3
	Pensions and transfers	15.9	0.736	0.508	0.060	14.8
	Self-employment income	9.4	0.880	0.542	0.045	11.2
	Capital returns	14.1	0.563	0.839	0.067	16.6
	Wealth annuity	31.2	0.675	0.917	0.193	48.1
	Income net worth	100.0	0.402	1.000	0.402	100.0
2010	Payroll income	28.4	0.552	0.246	0.039	9.3
	Pensions and transfers	15.6	0.739	0.484	0.056	13.5
	Self-employment income	9.0	0.884	0.538	0.043	10.3
	Capital returns	14.5	0.550	0.849	0.068	16.4
	Wealth annuity	32.6	0.690	0.926	0.208	50.4
	Income net worth	100.0	0.413	1.000	0.413	100.0

Table A3 cont.

DECOMPOSITION OF GINI INDEX BY INCOME NET WORTH COMPONENTS

(equivalent terms, unadjusted data)

Year	Income net worth component	Percentage share in Income net worth	Gini index	Rank correlation ratio	Absolute contribution	Percentage contribution
2012	Payroll income	28.3	0.562	0.257	0.041	9.7
	Pensions and transfers	16.8	0.719	0.498	0.060	14.4
	Self-employment income	7.7	0.904	0.557	0.039	9.2
	Capital returns	14.0	0.546	0.843	0.064	15.3
	Wealth annuity	33.2	0.697	0.932	0.216	51.4
	Income net worth	100.0	0.420	1.000	0.420	100.0
2014	Payroll income	29.6	0.563	0.280	0.047	11.6
	Pensions and transfers	17.4	0.739	0.514	0.066	16.4
	Self-employment income	8.4	0.900	0.538	0.040	10.0
	Capital returns	13.9	0.518	0.826	0.059	14.7
	Wealth annuity	30.8	0.675	0.920	0.191	47.3
	Income net worth	100.0	0.404	1.000	0.404	100.0

Table A4

DECOMPOSITION OF GINI INDEX BY INCOME NET WORTH COMPONENTS

(equivalent terms, adjusted data ADJ)

Year	Income net worth component	Percentage share in Income net worth	Gini index	Rank correlation ratio	Absolute contribution	Percentage contribution
1995	Payroll income	20.3	0.603	0.255	0.031	6.8
	Pensions and transfers	13.3	0.652	0.433	0.037	8.2
	Self-employment income	8.6	0.902	0.539	0.042	9.2
	Capital returns	26.9	0.628	0.935	0.158	34.6
	Wealth annuity	31.0	0.652	0.930	0.188	41.2
	Income net worth	100.0	0.456	1.000	0.456	100.0
1998	Payroll income	17.8	0.616	0.174	0.019	3.9
	Pensions and transfers	13.4	0.654	0.475	0.042	8.5
	Self-employment income	9.2	0.896	0.575	0.047	9.7
	Capital returns	20.2	0.625	0.920	0.116	23.9
	Wealth annuity	39.5	0.700	0.948	0.262	53.9
	Income net worth	100.0	0.486	1.000	0.486	100.0
2000	Payroll income	15.3	0.629	0.226	0.022	4.0
	Pensions and transfers	11.4	0.632	0.436	0.031	5.7
	Self-employment income	8.2	0.875	0.558	0.040	7.3
	Capital returns	22.3	0.677	0.947	0.143	26.2
	Wealth annuity	42.8	0.751	0.962	0.309	56.7
	Income net worth	100.0	0.546	1.000	0.546	100.0
2002	Payroll income	18.9	0.657	0.240	0.030	6.8
	Pensions and transfers	17.1	0.614	0.421	0.044	10.1
	Self-employment income	10.8	0.883	0.621	0.059	13.6
	Capital returns	17.8	0.577	0.884	0.091	20.8
	Wealth annuity	35.4	0.646	0.928	0.212	48.6
	Income net worth	100.0	0.436	1.000	0.436	100.0
2004	Payroll income	18.7	0.651	0.193	0.023	5.4
	Pensions and transfers	16.6	0.620	0.443	0.046	10.5
	Self-employment income	10.8	0.903	0.644	0.063	14.4
	Capital returns	18.6	0.602	0.877	0.098	22.6
	Wealth annuity	35.3	0.625	0.926	0.205	47.1
	Income net worth	100.0	0.434	1.000	0.434	100.0
2006	Payroll income	18.1	0.628	0.162	0.018	4.0
	Pensions and transfers	15.1	0.633	0.450	0.043	9.3
	Self-employment income	12.2	0.898	0.669	0.073	15.8
	Capital returns	17.2	0.603	0.890	0.092	20.0
	Wealth annuity	37.3	0.670	0.938	0.234	50.8
	Income net worth	100.0	0.461	1.000	0.461	100.0
2008	Payroll income	18.7	0.611	0.133	0.015	3.3
	Pensions and transfers	16.0	0.646	0.548	0.057	12.3
	Self-employment income	9.0	0.888	0.579	0.046	10.0
	Capital returns	18.4	0.622	0.907	0.104	22.4
	Wealth annuity	37.9	0.672	0.946	0.241	52.0
	Income net worth	100.0	0.463	1.000	0.463	100.0
2010	Payroll income	16.1	0.615	0.113	0.011	2.4
	Pensions and transfers	14.3	0.642	0.523	0.048	10.1
	Self-employment income	7.9	0.893	0.571	0.040	8.5
	Capital returns	19.5	0.579	0.918	0.104	21.9
	Wealth annuity	42.2	0.672	0.957	0.271	57.2
	Income net worth	100.0	0.474	1.000	0.474	100.0

Table A4 cont.

DECOMPOSITION OF GINI INDEX BY INCOME NET WORTH COMPONENTS

(equivalent terms, adjusted data ADJ)

Year	Income net worth component	Percentage share in Income net worth	Gini index	Rank correlation ratio	Absolute contribution	Percentage contribution
2012	Payroll income	15.9	0.635	0.117	0.012	2.5
	Pensions and transfers	15.7	0.631	0.542	0.054	11.4
	Self-employment income	7.1	0.903	0.530	0.034	7.2
	Capital returns	18.0	0.574	0.906	0.093	19.7
	Wealth annuity	43.3	0.674	0.962	0.281	59.3
	Income net worth	100.0	0.474	1.000	0.474	100.0

Table A5

DECOMPOSITION OF GINI INDEX BY INCOME NET WORTH COMPONENTS

(equivalent terms, adjusted data ADJ_CAL)

Year	Income net worth component	Percentage share in Income net worth	Gini index	Rank correlation ratio	Absolute contribution	Percentage contribution
1995	Payroll income	24.7	0.571	0.270	0.038	9.4
	Pensions and transfers	15.5	0.611	0.272	0.026	6.4
	Self-employment income	18.8	0.848	0.709	0.113	28.1
	Capital returns	17.5	0.663	0.858	0.099	24.6
	Wealth annuity	23.6	0.611	0.880	0.127	31.5
	Income net worth	100.0	0.403	1.000	0.403	100.0
1998	Payroll income	25.0	0.564	0.234	0.033	7.7
	Pensions and transfers	15.8	0.633	0.345	0.034	8.1
	Self-employment income	17.9	0.863	0.683	0.105	24.7
	Capital returns	13.7	0.780	0.863	0.092	21.7
	Wealth annuity	27.6	0.651	0.896	0.161	37.8
	Income net worth	100.0	0.426	1.000	0.426	100.0
2000	Payroll income	23.3	0.580	0.247	0.033	7.8
	Pensions and transfers	15.0	0.610	0.286	0.026	6.1
	Self-employment income	18.2	0.848	0.704	0.109	25.4
	Capital returns	14.8	0.679	0.854	0.086	20.1
	Wealth annuity	28.6	0.673	0.901	0.174	40.5
	Income net worth	100.0	0.428	1.000	0.428	100.0
2002	Payroll income	23.9	0.560	0.191	0.026	6.1
	Pensions and transfers	15.9	0.632	0.328	0.033	7.8
	Self-employment income	19.0	0.848	0.741	0.119	28.2
	Capital returns	14.0	0.699	0.841	0.082	19.5
	Wealth annuity	27.2	0.665	0.897	0.162	38.4
	Income net worth	100.0	0.422	1.000	0.422	100.0
2004	Payroll income	24.0	0.563	0.206	0.028	6.2
	Pensions and transfers	16.1	0.639	0.396	0.041	9.2
	Self-employment income	19.3	0.912	0.790	0.139	31.2
	Capital returns	11.8	0.751	0.700	0.062	13.9
	Wealth annuity	28.8	0.670	0.910	0.176	39.5
	Income net worth	100.0	0.445	1.000	0.445	100.0
2006	Payroll income	26.8	0.556	0.232	0.035	7.9
	Pensions and transfers	17.1	0.655	0.461	0.052	11.8
	Self-employment income	15.0	0.901	0.693	0.094	21.4
	Capital returns	11.2	0.681	0.812	0.062	14.2
	Wealth annuity	29.9	0.711	0.924	0.197	44.8
	Income net worth	100.0	0.439	1.000	0.439	100.0
2008	Payroll income	25.4	0.547	0.203	0.028	6.4
	Pensions and transfers	16.3	0.720	0.511	0.060	13.6
	Self-employment income	14.9	0.858	0.693	0.088	20.1
	Capital returns	13.0	0.671	0.824	0.072	16.3
	Wealth annuity	30.5	0.688	0.916	0.192	43.6
	Income net worth	100.0	0.440	1.000	0.440	100.0
2010	Payroll income	25.8	0.544	0.221	0.031	6.8
	Pensions and transfers	17.4	0.668	0.474	0.055	12.0
	Self-employment income	12.8	0.897	0.689	0.079	17.3
	Capital returns	14.1	0.716	0.889	0.089	19.5
	Wealth annuity	30.0	0.726	0.936	0.204	44.4
	Income net worth	100.0	0.458	1.000	0.458	100.0

Table A5 cont.

DECOMPOSITION OF GINI INDEX BY INCOME NET WORTH COMPONENTS

(equivalent terms, adjusted data ADJ_CAL)

Year	Income net worth component	Percentage share in Income net worth	Gini index	Rank correlation ratio	Absolute contribution	Percentage contribution
2012	Payroll income	25.2	0.553	0.211	0.029	6.7
	Pensions and transfers	18.3	0.652	0.466	0.055	12.6
	Self-employment income	13.2	0.888	0.714	0.084	19.1
	Capital returns	12.5	0.663	0.862	0.071	16.3
	Wealth annuity	30.9	0.691	0.933	0.199	45.4
	Income net worth	100.0	0.439	1.000	0.439	100.0

Table A6

DISTRIBUTION OF TOTAL ANNUITY BY CLASSES OF INCOME NET WORTH

(percentages)

Income net worth percentile	1995	1998	2000	2002	2004	2006	2008	2010	2012
				Unadjusted data					
1st	0.7	0.8	0.8	0.7	0.6	0.6	0.4	0.3	0.2
2nd	1.6	1.5	1.6	1.5	1.4	1.4	1.1	0.9	0.9
3rd	2.8	2.8	2.3	2.5	2.7	2.3	2.0	1.9	1.5
4th	3.9	3.7	3.4	3.6	3.6	3.1	3.2	2.9	2.5
5th	5.3	4.7	4.3	4.7	4.8	4.0	4.1	4.2	3.9
6th	6.2	6.1	5.4	6.4	6.5	5.8	5.6	5.7	5.5
7th	8.5	7.3	7.5	8.0	8.3	8.1	7.8	7.2	7.6
8th	10.7	10.4	9.5	10.9	11.2	10.8	11.0	10.6	10.0
9th	16.1	15.1	14.5	16.2	16.8	16.4	16.5	15.8	16.7
10th	44.3	47.5	50.7	45.4	44.3	47.5	48.3	50.6	51.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				ADJ					
1st	1.1	0.7	0.5	0.7	0.5	0.5	0.4	0.3	0.3
2nd	1.4	1.4	1.1	1.4	1.3	1.3	1.1	0.9	0.8
3rd	2.4	2.0	1.8	2.2	2.6	2.1	2.0	1.7	1.6
4th	3.2	2.8	2.4	3.4	3.2	2.7	2.8	2.6	2.5
5th	4.3	3.6	3.4	4.2	4.6	3.8	4.0	3.9	3.6
6th	5.5	4.9	4.4	5.7	6.1	5.5	5.6	5.4	5.3
7th	7.3	6.1	5.4	7.7	7.7	7.6	7.5	7.1	7.1
8th	10.1	8.7	7.5	10.3	10.7	10.1	10.8	10.5	10.0
9th	15.8	13.8	12.5	15.0	16.8	15.8	15.9	16.0	15.9
10th	49.0	56.1	61.1	49.5	46.5	50.9	49.8	51.7	52.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				ADJ_CAL					
1st	0.8	0.5	0.3	0.2	0.3	0.1	0.3	0.1	-0.1
2nd	0.8	0.9	0.8	0.6	0.7	0.9	0.8	0.7	0.5
3rd	1.7	1.6	1.5	1.2	1.5	1.6	1.5	1.6	1.2
4th	2.4	2.4	2.3	2.3	2.5	2.5	2.3	2.8	2.1
5th	4.1	3.7	3.9	2.9	3.3	3.7	3.5	4.8	3.7
6th	6.2	5.3	5.3	4.5	4.9	5.5	5.1	6.0	5.3
7th	8.2	7.0	6.6	5.9	6.6	7.6	7.2	7.6	6.9
8th	11.7	10.0	8.9	9.0	9.5	10.1	10.1	10.2	10.5
9th	18.2	17.3	16.3	15.9	16.2	16.0	16.0	14.6	18.4
10th	45.9	51.4	54.2	57.5	54.6	52.2	53.2	51.7	51.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table A7

DISTRIBUTION OF TOTAL CAPITAL RETURNS BY CLASSES OF INCOME NET WORTH

(percentages)

Income net worth percentile	1995	1998	2000	2002	2004	2006	2008	2010	2012
					Unadjusted data				
1st	1.3	1.3	1.5	1.5	1.3	1.6	0.9	1.2	1.3
2nd	2.3	2.5	2.5	2.7	2.4	3.1	2.3	2.1	2.3
3rd	4.0	3.7	3.9	3.9	4.3	4.0	3.4	3.9	4.0
4th	5.1	4.7	4.9	5.3	5.3	5.4	4.7	5.1	5.0
5th	6.3	6.4	5.9	6.5	6.5	6.8	7.0	6.3	6.4
6th	7.3	7.7	7.2	8.1	8.2	8.1	8.0	8.5	8.7
7th	9.3	9.1	9.0	10.3	10.3	10.3	10.1	9.5	10.2
8th	12.0	11.0	11.9	12.0	12.5	12.5	13.1	13.0	12.6
9th	15.8	15.4	16.4	16.1	17.0	17.2	16.9	16.7	16.5
10th	36.7	38.3	36.8	33.7	32.5	31.1	33.5	33.7	33.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
					ADJ				
1st	0.3	-0.4	0.7	1.0	0.8	0.8	0.6	0.7	1.0
2nd	1.6	1.8	1.7	2.1	1.9	2.1	1.8	1.6	1.8
3rd	2.7	2.8	2.5	3.1	3.3	3.3	2.6	2.8	3.1
4th	3.7	4.0	3.4	4.0	4.0	4.4	4.0	4.0	4.1
5th	4.7	5.1	4.5	5.5	5.4	5.1	5.8	5.3	5.6
6th	5.8	6.4	5.6	6.7	7.0	7.3	7.2	6.5	7.1
7th	8.0	8.2	7.3	9.0	9.0	9.3	9.0	8.9	9.5
8th	11.2	10.7	10.6	11.4	11.3	11.3	11.9	11.9	11.8
9th	17.4	15.0	15.5	15.2	16.3	15.9	16.5	17.0	16.5
10th	44.7	46.5	48.2	41.8	41.2	40.6	40.7	41.3	39.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
					ADJ_CAL				
1st	-1.8	-9.7	-0.7	-0.1	0.1	-1.3	-0.2	0.0	-0.4
2nd	0.8	1.1	0.8	0.7	1.1	0.7	0.9	1.0	1.0
3rd	1.2	1.9	1.6	1.3	2.1	2.6	1.7	2.0	1.3
4th	2.9	3.3	2.8	2.0	3.1	4.4	3.0	3.3	3.0
5th	4.4	4.8	4.1	3.3	4.6	5.7	5.0	5.8	5.4
6th	6.2	7.2	5.3	4.9	6.3	8.7	7.1	5.8	6.4
7th	9.2	9.5	7.3	6.5	9.0	11.3	9.1	9.2	9.7
8th	12.9	13.2	11.6	9.7	12.3	12.5	12.0	11.2	11.4
9th	20.0	20.7	20.1	15.8	17.8	18.5	18.5	17.0	19.3
10th	44.3	48.2	47.3	55.9	43.7	36.9	42.7	44.8	43.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0