

The Effects of Social Security on the Distribution of Wealth in Italy

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Abstract

The degree of substitutability between social security wealth and private wealth is a much-debated topic; however, less time and energy has been devoted to the study of the distributive properties of a measure of wealth summing future pension benefits net of contributions to the other traditional components of households' net worth (financial and real activities, net of liabilities). The present paper has two essential aims: by using the last six cross-sections of the Bank of Italy's Survey of Income and Wealth, it firstly aims to estimate an "augmented" measure of net worth incorporating social security wealth, and secondly it examines the composition and distribution of such augmented wealth among Italian households during the period 1991-2002. The result is that augmented wealth is found to have fallen over the last decade due to two opposing forces, namely an increase in net worth and a parallel stronger decline in social security wealth, resulting from the two main pension reforms implemented in 1992 and 1995. Wealth inequality, after rising steeply at the beginning of the 1990s, levelled off during the second part of the period in question. The major contribution towards this upwards movement came from social security wealth, the distribution of which, although less unequal than that of real wealth and financial wealth, widened at a much faster pace at the beginning of the decade.

1. Introduction

Future social security benefits constitute a major part of total household wealth in all developed countries. Any analysis of the accumulation and distribution of wealth, and of its evolution over time, would therefore be misleading were it not to include the value of annuities expected from the pension system. In order to take account of the effects of the pay-as-you-go system on wealth distribution in the US, Feldstein (1976) introduced an “augmented” definition of household wealth, whereby social security wealth was added to the other traditional components of each household’s net worth. Other studies, and in particular those by Kennickel and Sunden (1997) and by Wolff (1987 and 2003), further refined the analysis of the distributional effects of the pension system on total wealth. All of these studies concluded that social security wealth had a clearly mitigating effect on the distribution of total wealth in the United States, whereas the effect of private pension wealth was perceived as being of a more mixed nature.

The main aim of this present paper is to estimate an augmented definition of wealth for Italian households, in order to evaluate the effects of the Italian Social Security system on the distribution of total wealth during the period 1991-2002. Several important events during this decade render this analysis of particular interest: i) three structural reforms of the public pension system were introduced (1992, 1995 and 1997), nearly halving the aggregate value of social security wealth, reducing the internal rate of return and enhancing the actuarial degree of fairness of the system. The reduction in social security wealth was of an uneven nature, affecting diverse cohorts and productive categories within Italian society to different degrees; ii) there were important changes to the allocation of financial activities during the course of the decade, ending in the bursting of the financial bubble; iii) the real component of net worth, and in particular real estate, grew steadily from 1992 onwards, thus counterbalancing the effect of the bursting of the financial bubble.

The distributive effects of ii) and iii) on the net worth of Italian households have been empirically analysed by Jappelli and Pistaferri (2000), and with particular accuracy by Brandolini et al. (2004). Both the latter studies base their estimations of net worth on the Bank of Italy’s “Survey of Household Income and Wealth” (SHIW). By using data from this survey’s historical archive for the period 1991-2002, we estimate a broader definition of household wealth which includes the present value of those future pension benefits (net of payroll taxes) expected by the retired and active population.

The paper is organised as follows: section 2 provides a brief review of the literature on the distributive effects of social security systems on the distribution of wealth; section 3 describes the data sources and the accounting framework for the definition of total wealth used in this paper;

section 4 presents the estimation of social security wealth; section 5 offers new microeconomic evidence of the composition and inequality of total wealth in Italy during the period 1991-2002; and section 6 presents our conclusions.

2. Overview of recent studies

The introduction and growth of public pension programs radically influences the process of saving and wealth accumulation. In Italy, as in the majority of developed countries, future social security benefits represent a substantial part of total household wealth. Since Feldstein's study (1974), which introduced the concept of social security wealth for the first time, this variable has been empirically estimated using both aggregate and survey data. In particular the degree of substitutability between social security wealth and private wealth has been tested in a large number of analyses designed to verify the validity of the life-cycle hypothesis (for Italy studies, see Rossi and Visco 1990, Jappelli 1995). Social security wealth measures and estimates have also been widely employed in political and economic debate in order to gauge the sustainability of the public pension system, the long-term effects of pay-as-you-go systems on public finance (Oecd 1990, Sartor 2002, Brugiavini and Peracchi 2004), and the effects of pension rules on labour supply decisions (Brugiavini and Peracchi 2003).

Fewer studies have tried to analyse the distributive properties of social security wealth: the exceptions are the works by Feldstein (1976), Wolff (1987, 2003), Mc Garry (1999) and Kennickell and Sunden (1999), providing estimations of the distributive effects of this variable in the US. All of these studies define the total wealth of each household as the sum of net worth, pensions and social security wealth. According to Feldstein (1976), the exclusion of social security wealth would distort the real picture of the distribution of household wealth. In his study he uses survey data to estimate a measure of social security wealth derived from the current distribution of earnings in a steady-state hypothesis. He finds that total wealth in the US is much less concentrated after the inclusion of social security wealth. The Gini coefficient for net worth is 0.72, while for total wealth it is down to 0.51. Moreover, the distribution of total wealth among income classes is more similar to the distribution of social security wealth than to that of net worth. McDermod et al. (1987) find that pensions represent 43% of the net worth of those households where pensions are received. Wolff (1987) shows that social security wealth has a pronounced equalising effect on the distribution of total wealth. He simulates the lifetime wealth distribution of the US population and finds that private pension wealth is less equally distributed than disposable wealth, but its

magnitude is very low. In contrast, the inclusion of social security wealth produces a marked reduction in measured wealth distribution. The Gini coefficient decreases from 0.73 to between 0.49 and 0.60. This marked reduction in inequality can be explained by the fact that social security wealth is much more evenly distributed than disposable wealth, and its magnitude is very close to that of traditional household wealth. Kennikel and Sunden (1999) also find that social security wealth constitutes a substantial part of total wealth, and its introduction has had an equalising effect on US wealth distribution. In particular, they show that the bottom 90% of the population hold the overwhelmingly proportion of social security wealth, whereas the top 0.5% own 45% of business assets and 30% of traded corporate stocks. Gustmann et al. (1997) estimate that pensions, social security wealth and health insurance account for half of the wealth held by all households with an average age of between 51 and 61. In a more recent paper, Wolff (2003) estimates distributive trends for various measures of wealth which show that the inclusion of social security wealth results in a marked reduction in the Gini coefficient for total wealth, from 0.822 to 0.657 in 1998. This reflects both the lower level of inequality in social security wealth than in marketable wealth, as well as its relatively low correlation to net worth. Over a 16-year period (1983-1998) the equalising effect of social security wealth decreased.

Relatively few studies have empirically explored wealth distribution in Italy (Cannari and D'Alessio 1994, Jappelli and Pistaferri 2000, Brandolini et al. 2004). To our knowledge, none of these studies includes an estimate of social security wealth and its redistributive impact. Cannari and D'Alessio (1994) examine household wealth inequality using the 1991 SHIW, and show that at the beginning of the last decade, the proportion of net worth (defined as the total market value of dwellings, consumer durables and financial assets, net of debts) held by the richest decile amounted to 39%, while the corresponding figure for the poorest decile was a mere 0.2%. Using data drawn from four cross-sections (1989, 1991, 1993 and 1995) of the Bank of Italy's SHIW, Jappelli and Pistaferri (2000) characterise the static and dynamic features of wealth distribution, and compare them with consumption and income inequality. They distinguish between net worth and financial wealth, where the former is defined as the sum of households' financial assets and real net assets. The authors found that wealth distributions are by far more right-skewed and dispersed than the corresponding distributions for consumption and disposable income: net worth and financial wealth displayed Gini indexes of 0.59 and 0.70 respectively in 1995, as opposed to scores of 0.30 and 0.36 for consumption and disposable income. Examining wealth distribution by income deciles, they also discovered that both mean and median wealth monotonically increase with the household's ranking in the income distribution table, implying a strong correlation between the relative positions of the two distributions. Finally, the transition matrices for net worth and financial wealth in 1993

and 1995 showed a relatively limited degree of wealth mobility, with slightly less immobility in the distribution of financial wealth. Using the SHIW historical archive, Brandolini et al. (2004) have more recently investigated the composition and distribution of wealth among Italian households, together with its evolution from 1989 to 2000. They have found that wealth distribution is a lot more unequal than income distribution: in 2000 the Gini index was 0.61 for net worth, compared with 0.37 for disposable income. The corresponding values of the Gini index for the main components of net worth were 0.60 for real assets, compared with a much higher value of 0.81 for financial assets. Wealth inequality declined from 1989 to 1991 and then rose considerably during the rest of the decade, due mainly to the large gains made at the very top of the distribution. In particular, a substantial part of the increase in net worth inequality was traceable to financial assets, which have both increased their weight in portfolios and become more heavily concentrated.

3. Data sources and the accounting framework

The data used in this study are taken from the 1991, 1993, 1995, 1998, 2000 and 2002 Surveys of Household Income and Wealth (SHIW) conducted by the Bank of Italy. The sample size is about 8,000 units per year. The survey gathers information on household microeconomic behaviour and on the socio-demographic characteristics of household members. The basic unit of observation is the “household”, defined as all persons related by blood, marriage or affection, residing under the same roof and pooling all or part of their incomes. Institutional population is not included. The SHIW, much like all sample surveys on household income and wealth, suffers from a lack of response. In the last six surveys the response rate (net of those units not found at the address given) has been variable, and sometimes has been considerably low. It has ranged from a minimum of 36.1 % in 2002 to a maximum of 72.0 % in 1993. Non-response in statistical surveys is obviously a matter of concern whenever it produces samples where the less co-operative segments of the population, usually the richer households, are under-represented. To limit these potentially distorting effects, each household is weighted by an appropriate sample weight. However, no allowance is made for taking account of the household size or composition: in other words, no equivalence scale is used.

The principal concept of wealth used in this study is “augmented” wealth, which is defined as the sum of net worth and social security wealth (Davies and Shorrocks 2001, Wolff 2003). The first component of augmented wealth is net worth, which is equal to the total value of all those assets the

household can sell in the market, less any debts¹. According to a number of authors (Feldstein 1976, Wolff 1987, Jappelli and Modigliani 1998), net worth is not a satisfactory definition of wealth in those countries where there is a mandatory, public, almost actuarially fair pension system (Lindbeck and Persson 2003). If contributions to a social security scheme are perceived by individuals as a substitute for other forms of lifecycle saving, then a definition of wealth which is capable of measuring the stock of resources to be used to finance consumption, perhaps ought to consider the present value of future pension entitlements as well. This point is forcefully argued by Jappelli and Modigliani (1998); they point out that in any pension scheme, contributions entitle workers to receive a retirement pension, and so contributions should be regarded as a (compulsory) component of life-cycle saving. On the other hand, pension benefits represent the utilisation of pension wealth that was previously accumulated prior to retirement. It is clear that the importance of this point increases with the size of the public pension system and with its degree of actuarial fairness, and is not related to whether the system is funded or not.

In the case of actuarial fairness, the measurement of social security wealth at a given time is simply equal to the accrued capitalised value of pension entitlements. In all other situations (i.e. when the pension system's internal rate of return is different from the market interest rate), the social security wealth of each individual should be measured as the difference between the present value of future pension benefits and that one of future payroll taxes.

Italy has a very extensive pension system: the payroll tax is equal to 33% of gross earnings for employees and to 19% for the self-employed. Its degree of actuarial fairness will gradually increase as the 1995 reform is phased in. Therefore we believe that the definition of augmented wealth could offer a more complete description of both the level and the distributive properties of total wealth among Italian households. Accordingly, our definition of augmented or total wealth, TW , at time t can be summarised as follow:

$$TW_t = AR_t + AF_t - PF_t + SSWN_t$$

Where AR is the sum of consumer durable goods, jewellery and other valuables, real estate and businesses; AF is the sum of all financial assets; PF measures all debts and $SSWN$ is the present value of future pension benefits net of the expected contributions to be paid from the time of observation until retirement. Our definition of total wealth does not include cash and currency,

¹ Following the definition used in the SHIW, net worth is here defined as the total value of tangible assets (real estates, business equity and other valuables) and financial assets (transaction and saving accounts, government bonds, equities and other assets), net of financial liabilities (mortgages and other debts).

severance indemnity and the cash value of life insurance and private retirement accounts, which are not recorded in our data source.

Comparisons with external sources such as the national accounts show that the quality of net worth estimates in the SHIW is under-reported, this being particularly so in the case of financial assets. According to some calculations made from the SHIW historical archives, transactions and savings accounts appear to have been underestimated over the last decade by an average of 64%, government bonds by 70%, and private bonds, company shares and investment shares by 85 % (Brandolini et al. 2004). The discrepancy between the SHIW estimates and the corresponding aggregate figures is lower, albeit still remarkable, in the case of real assets, which were underestimated by around 25% for the same period.

The discrepancies between aggregate and survey data can be accounted for on several grounds: firstly, by the existence of irreconcilable differences in classifications and definitions, which prevent micro and macro data from being fully comparable; and secondly, by interviewees' tendency to be reticent about the assets they actually own (non-reporting) or to under-value their declared asset holdings (under-reporting).

A range of statistical techniques have been adopted in to correct for non-reporting and under-reporting, of both financial assets and dwellings not occupied by their owners, in the SHIW (Cannari and D'Alessio 1990, 1993). These correction procedures have a substantial impact on those surveys carried out in the 1990s. Overall, the shortfall compared with macro sources is reduced from 75 to 39 % for total financial assets, from 26 to 8 % for real assets, and from 41 to 17 % for net worth (Brandolini et al. 2004). However, the corrections vary considerably from one year to the next, and consequently so do the remaining discrepancies with respect to aggregate figures.

Although we believe that the adjusted data could paint a more realistic picture of the distribution of household wealth than the one implied by the raw micro data, we have yet to perform any statistical adjustment; however, we aim to deal with non-reporting and under-reporting in the near future. This will allow us to test the robustness of our current results and their sensitivity to the statistical corrections. In the light of these considerations, we recommend that the empirical evidence presented in section 5 be interpreted with particular care.

4. The calculation of social security wealth

The survey data (SHIW) do not contain information about social security wealth, and so the present section describes how we estimated this variable. Social security wealth is defined as the sum of

expected future benefits less the sum of contributions a worker expects to pay between the time of observation and his/her retirement. According to this definition, at each point of time and for each individual, social security wealth expresses an individual's accrued entitlements to wealth resulting from participation in the public pension scheme.

For each individual present in the six surveys (1991, 1993, 1995, 1998, 2000 and 2002) we first computed the present value of future pension benefits. In doing so we used information about age, gender, occupation, seniority, expected retirement age, earnings, life expectancy and the relevant social security legislation in force during the year of observation. Next we estimated the present value of the individual's contributions to his/her pension scheme and we net out this value from the current value of future benefits. Both future pensions and future contributions are discounted back to the year of observation in order to render the value of social security wealth comparable with other components of total wealth.

Since figures for net worth are collected at the household level, we need to sum up social security wealth computed at time t for each household. In theoretical terms, for household i observed at time t we have:

$$SSWN_{i,t} = \sum_{j=1}^N \left[(1+r)^{(t-p)} \sum_{k=p}^{p+d} (1+r)^{(p-k)} P_{pj} (1+i)^{(k-p)} - \sum_{k=t}^{p-1} c_k W_{kj} (1+r)^{(p-1-k)} \right]$$

where N is the maximum number of individuals within the household receiving a pension, p is the expected year of retirement of individual j , d is the life expectancy at retirement of individual j , P_p is the pension benefit received upon retirement, r is the discount rate, i is the real annual growth of the pension benefit, c_k is the payroll tax rate at year k and W_k is gross wage at year k .

The estimation of social security wealth necessarily involves numerous approximations together with the use of a series of hypotheses, all of which we shall be looking at in the next part of this section. In particular, we have adopted the following hypotheses:

1. we express all values in 2002 constant Euros, and we assume perfect foresight regarding future inflation and a complete price-indexation mechanism;
2. we assume that workers have full knowledge of the pension rules;
3. there are two forms of reasoning leading individuals to retire: either they have a sufficient number of years of pension contributions to access a seniority pension, and thus they leave the job immediately; or they exit the labour market when they reach the legal retirement age;

4. life expectancies used for the computation of social security wealth are taken from forecasted survival estimations furnished by Istat;
5. lifetime earnings used to compute future pension benefits and future contributions are estimated in terms of gender, of three different levels of education, of ten cohorts, and for employees and the self-employed separately;
6. a constant rate of growth of gross wages and the discount rate is assumed;
7. indexation of pensions only corresponded to earnings growth in 1991. Thereafter, pensions for each individual have been kept constant in real terms.

4.1 Earnings profiles

The estimation of lifetime earnings is particularly important because the calculation of the level of pension benefit has gradually shifted from a final-salary formula (adopted in 1991) to a lifetime-earnings formula (1992), and then to a contribution-related formula. We have estimated 12 stylised profiles of lifetime earnings obtained from a combination of gender, education (three levels - primary, secondary and tertiary) and employment status (employee or self-employed). We also take explicit account of cohort effects by introducing a set of cohort dummies into the regression.

The income figures from the surveys are net of personal income tax, and so we grossed up net incomes using the following procedure : by defining YN_i and YL_i as the net income and the gross income of individual i , respectively, his/her gross income is calculated by solving the following equation:

$$YL_i = \frac{YN_i - (t_{j+1} - t_j)Y_{j+1} - \dots - (t_{j+n} - t_{j+n-1})Y_{j+n} - D_i}{(1 - t_{j+n-1})}$$

where:

Y_j = the upper limit of personal income tax income bracket j ;

t_j = the marginal tax rate of income bracket j ;

D_i = tax credit;

$YL_{j+n} < YN_i < YL_{j+n-1}$.

We computed gross earnings for the 1991, 1993, 1995, 1998, 2000 and 2002 surveys by taking account of those changes in the personal income tax law made during the period in question. Earnings profiles by gender, occupation and educational level are obtained as a result of regressing

the logarithm of gross earnings on a third degree polynomial on age and a set of cohort dummies. The shape of earnings profiles for different occupations, gender and educational levels are observed in figures 1 and 2. Estimated gross wages are then calculated on the basis of regression coefficients, taking into account estimated cohort effects and a constant annual real growth rate of 1%.

Figure 1

Gross earning profiles by gender and level of education. Employees.

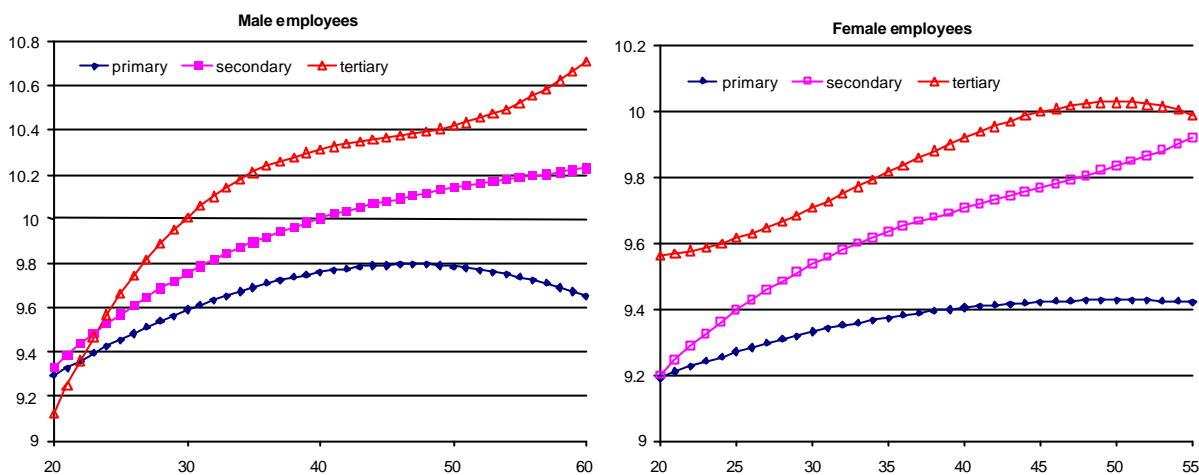
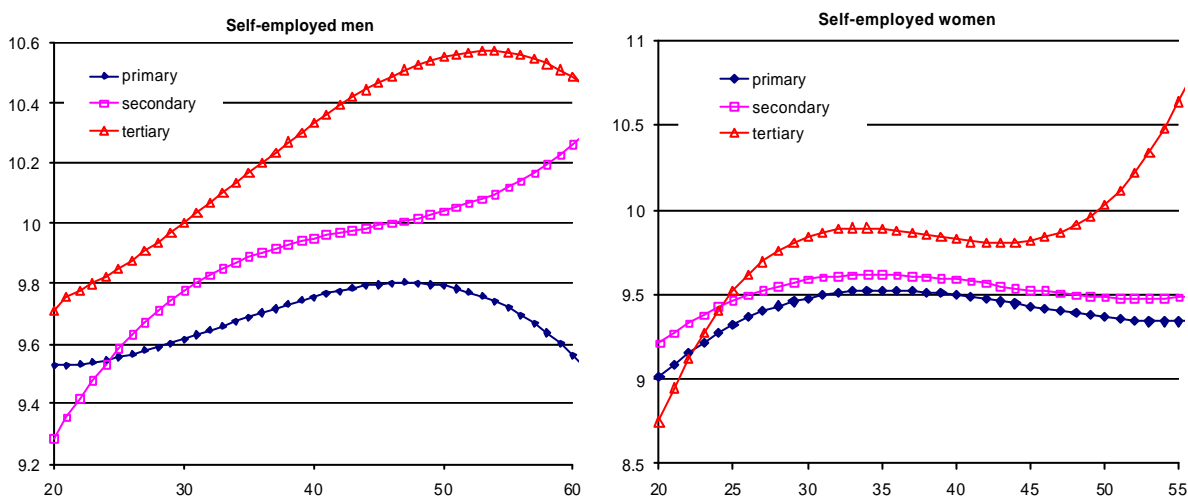


Figure 2

Gross earning profiles by gender and level of education. The self-employed.



4.2 Computation of pension benefits

In order to take account of the effects of the three pension reforms introduced in 1992, 1995 and 1997, we split our sample data into different groups according to occupational status and seniority

during the year in which the individual from the sample was observed. Firstly, we isolated retired people: pensions are not calculated for this group, since SHIW surveys report the net value of pension benefits received. In order to maintain a degree of homogeneity with the estimated values of future pension benefits for the active population, we grossed up net pension benefits by following the same procedure described in the previous subsection. The active population was split into three different groups according to seniority accrued in 1992. In particular, the first group comprised: all individuals from the 1991 survey, as no reform had been enacted yet in 1991; and all workers with at least 15 years of contributions in 1992. The second group comprised all workers with less than 15 years of contributions in 1992. The third group consisted of all those workers who entered the labour market after 1995. In each of the three groups, employees and the self-employed were analysed separately.

The first year pension benefit is then computed as a weighted average of various different components. Pension benefits for those individuals in the first group were calculated as follows:

$$P_A = r * (N_1 W_1 + N_2 W_2)$$

where:

$r = 0.02$, N_1 and N_2 are the number of years of contributions paid in before and after 1992, W_1 and W_2 are pensionable earnings before and after 1992.

Pension benefits for individuals in the third group are computed according to the contribution related formula introduced after 1995:

$$P_B = k * MC$$

where:

k is the legal transformation coefficient and MC is the capitalised value of career contributions with a real rate of return of 1.5%. Finally, pension benefits for individuals in the second group were computed as a weighted average of P_A and P_B , the weights, β and $(1-\beta)$, being given, respectively, by the ratio between the number of years of contributions made by the individual before and after the 1995 reform, and by the total number of working years:

$$P_c = \beta P_A + (1 - \beta) P_B$$

5. The composition and inequality of total household wealth: microeconomic evidence

Having drawn up a broad definition of household wealth with an incorporated social security component, this section presents a series of new estimates of the composition and distribution of

total wealth in Italy during the period 1991-2002. Our analysis is based on the data sets of the last six surveys by the SHIW Historical Archive of the Bank of Italy.

Median total wealth of an Italian household was about 20 % lower in 2002 than in 1991, as the first row in Table 1 shows. However, the decline in real terms was not a continuous one. In fact, after falling by 26 % between 1991 and 1998, median total wealth rose by 8 % from 1998 to 2002. Median disposable income displayed a similar trend, with a 5.2 % fall during the first half of the decade, a subsequent 10% recovery by 1998, and substantial stability thereafter. Mean total wealth was higher than the median, and it experienced a less pronounced fall during the course of the decade.

Table 1
Mean and Median Household Wealth, 1991-2002 (at 2002 prices in thousands of euro)

	1991	1993	1995	1998	2000	2002	% Change 1991-2002
<i>Total wealth</i>							
Median	314.1	243.6	233.4	230.8	237.0	250.1	-20.4
Mean	376.7	330.1	315.9	329.7	344.4	358.5	-4.8
Percent with zero or negative net worth	0.1	1.3	3.2	2.8	2.9	2.8	
<i>Real and financial assets*</i>							
Median	85.1	91.0	93.9	94.9	100.3	106.0	24.6
Mean	140.4	162.3	161.1	171.2	180.9	189.4	34.9
Percent with zero or negative net worth	1.4	4.7	4.0	3.8	3.5	3.4	
<i>Social security wealth</i>							
Median	206.2	136.1	112.7	112.9	113.6	121.0	-41.3
Mean	236.3	167.7	154.8	158.4	163.4	169.1	-28.4
Percent with zero or negative net worth	13.7	15.6	17.7	16.9	16.6	16.5	
<i>Disposable income**</i>							
Median	23.0	21.3	21.8	24.0	23.6	23.3	1.3
Mean	26.9	26.1	26.7	28.6	28.7	28.3	5.2

Source: our calculations from SHIW-HA figures

Median and mean values are expressed at 2002 prices calculated using the consumer price index

(*) Net of financial liabilities.

(**) Total household income net of taxes and social security contributions.

The time trend for median total wealth is the product of two opposing tendencies; on the one hand, a 25% increase in real and financial assets, and on the other, a stronger fall in social security wealth, with an almost 42% fall in the median figure. The reduction in mean social security wealth appears to be mainly concentrated between 1991 and 1995. This reduction may be explained by the abolition of the indexation of pensions to real wage growth after 1991, involving all current and future pensioners, together with the changes in the computation of pension benefits introduced by

the 1992 and 1995 reforms, which was to chiefly affect young workers and the self-employed. Due to its sharp fall, social security wealth has not accounted for the largest share of household wealth since 1995. The rise in net worth is largely attributable to the increase in home-ownership and dwelling size, the exceptional rise in house prices, the substantial shift in household portfolios towards higher-risk assets, and the remarkable increase in stock market prices during the late 1990s. In 2002, the top 1% of all families owned 8% of total household wealth; the top 20% of households held 53%. By focussing on the two components of total wealth, we estimated that the richest quintile owned 58% of real and financial assets, and 48% of social security wealth. A more detailed breakdown by various different percentiles of wealth distribution is shown in Table 2 below.

Table 2
Distribution of Household Wealth, 1991-2002

<i>Year</i>	<i>Percentage Share of Total Wealth and its components held by</i>							
	<i>Top 1%</i>	<i>Next 4%</i>	<i>Next 5%</i>	<i>Next 10%</i>	<i>Top 20%</i>	<i>2nd 20%</i>	<i>3rd 20%</i>	<i>Bottom 40%</i>
<i>Total wealth</i>								
1991	5.6	11.4	10.1	16.5	43.6	25.5	16.5	14.4
1993	8.1	13.2	12.5	17.7	51.5	23.3	14.6	10.6
1995	7.9	15.9	12.7	17.4	53.9	23.6	13.9	8.6
1998	9.2	15.1	13.0	18.3	55.6	23.4	13.4	7.6
2000	8.5	15.8	12.9	19.4	56.5	22.4	13.2	7.9
2002	8.0	14.1	13.0	18.2	53.3	24.4	14.1	8.2
<i>Real and financial assets</i>								
1991	9.7	15.0	11.2	16.3	52.3	22.7	13.4	11.5
1993	13.3	16.2	13.9	17.5	60.1	20.0	11.5	7.6
1995	11.0	18.9	13.1	16.8	59.7	21.1	11.6	7.6
1998	14.6	17.4	13.0	16.5	61.5	19.7	11.4	7.4
2000	12.8	18.6	13.1	17.7	62.3	18.9	11.2	7.6
2002	12.2	15.8	13.1	17.1	58.3	21.5	12.3	7.9
<i>Social Security Wealth</i>								
1991	3.3	9.4	9.4	16.6	38.7	27.0	18.2	16.7
1993	3.3	10.3	11.1	17.9	42.7	26.3	17.4	13.4
1995	4.9	12.9	12.3	18.0	48.1	26.2	16.1	9.5
1998	3.8	12.9	13.0	20.1	49.8	26.9	15.4	7.8
2000	4.1	13.0	12.6	20.9	50.8	25.9	15.2	8.1
2002	3.6	12.5	12.5	19.4	48.4	27.2	15.9	8.5

Source: our calculations from SHIW-HA figures.

In order to calculate percentile shares, households were ranked according to their total wealth.

The figures show that total wealth inequality, while rising steeply at the beginning of the 1990s, substantially levelled off during the second half of the decade. For example, the share of total wealth held by the top 1% rose from an initial figure of 5.6 % in 1991 to 7.9 % in 1995, before remaining stable around 8-9 % for the rest of the period. The share of total wealth held by the richest quintile showed a monotonically increasing trend, from 44 % in 1991 to 56 % in 2000, with only a slight reduction (from 56.5 to 53.3 %) between 2000 and 2002. At the other extreme of the distribution range, the share of total wealth held by the bottom two quintiles almost halved within the space of ten years, falling from 14.4 % in 1991 to 8.2 % at the end of the period. A similar trend characterised the inequality in the distribution of real and financial assets. For example, the share held by the top 1 % grew from an initial 9.7 % to 14.6 % in 1998, before falling to 12.2 % in 2002. Not surprisingly, given that social security wealth is essentially correlated with lifetime distribution of earnings, it appears concentrated to a much smaller degree than real and financial wealth are. At the beginning of the 1990s, the share of social security wealth held by the top 1 % “only” amounted to 3.3 %, while the figure for the corresponding percentile with regard to the distribution of real and financial wealth was 9.7 %. The same was true of the shares held by the other percentiles of the richest decile of the two distributions. The pension reforms implemented over the last decade seem to have reduced the equalising effect of social security wealth on total wealth. In fact, the percentage of social security wealth accruing to the bottom 40 % of the distribution fell by almost one half, from 16.7 to 8.5 %.

Table 3, showing the Gini index for total household wealth and its components, substantially confirms the previously-mentioned picture. There was a substantial rise in total wealth inequality during the first part of the period, from almost 41 % to 50 %, followed by a slight upwards trend during the rest of the decade from 50 % to almost 52 %. The major contribution to this upwards movement came from social security wealth, whose distribution widened during the first part of the decade at a much faster pace than that of both real assets and financial assets. In particular, the Gini index for social security wealth rose by around twelve percentage points, from 43 % in 1991 to 55 % in 1995. It remained roughly stable thereafter until 2002.

In 1991, social security wealth was the most important household asset, accounting for about 63 % of total wealth, as shown in table 4. The second largest asset was real estate, representing 28 % of total wealth, followed by business equity (4 %) and transactions and savings accounts (2.5 %). Financial liabilities were negligible at round 1 % of total wealth. The two most striking changes that took place between 1991 and 2002 were the fall in social security wealth to 47 %, and the rise in real estate to 39 %. The relatively low share of financial assets shown in table 4 would seem attributable to the previously-mentioned problems of non-reporting and under-reporting.

Table 3

The Gini Index for Total Household Wealth and its components

	1991	1993	1995	1998	2000	2002
<i>Total wealth</i>	40.6	47.4	50.0	51.6	51.8	51.8
<i>Real and financial assets*</i>	59.1	63.0	61.5	63.4	63.1	62.2
Real assets	61.0	64.1	62.3	64.2	63.0	62.4
Financial assets	70.7	73.9	73.9	74.9	80.8	77.3
Financial liabilities	92.5	92.0	91.6	93.1	93.5	92.6
<i>Social security wealth</i>	43.4	48.9	55.1	55.8	55.8	55.8

Source: our calculations from SHIW-HA figures.

(*) Net of financial liabilities.

Table 4

Composition of Total Household Wealth

	1991	1993	1995	1998	2000	2002
<i>Real assets</i>	33.5	44.1	45.7	44.9	45.1	46.6
Real estate	28.1	36.5	39.3	38.0	38.2	39.2
Business equity	4.3	6.7	5.3	5.9	5.7	5.9
Valuables	1.1	0.9	1.1	1.0	1.2	1.5
<i>Financial assets</i>	4.5	6.1	6.4	8.0	8.5	7.4
Transactions and saving accounts	2.5	2.8	2.9	3.9	4.0	4.1
Government bonds	1.4	1.9	2.3	1.0	1.2	0.7
Private bonds, equities, mutual funds	0.6	1.4	1.2	3.1	3.3	2.6
<i>Financial liabilities</i>	0.7	1.0	1.1	0.9	1.1	1.2
<i>Real and financial assets*</i>	37.3	49.2	51.0	52.0	52.5	52.8
<i>Social security wealth</i>	62.7	50.8	49.0	48.0	47.5	47.2

Source: our calculations from SHIW-HA figures.

(*) Net of financial liabilities.

The ratio of financial assets to total wealth increased from 4.5 % in 1991 to 7.4 % in 2002, reaching a peak of 8.5 % in 2000 before the bursting of the financial bubble. Figures show that households have replaced government bonds with riskier investments such as equities, private bonds and mutual funds.

There are considerable differences in household portfolios, depending on the level of wealth. Tables 5 and 6 provide a breakdown in terms of the top 1 % of households, the next 19 % and the bottom 80 %, at the beginning of the period and then at the end.

In 1991 the richest 1 % of households invested about 44 % of their savings in real estate, and 11 % in business equity. Social security wealth accounted for 37.5 % of total wealth. Among the next 19 % of households, 60 % of their wealth took the form of social security wealth, while real estate

accounted for 30 %. The role of social security wealth was even more pronounced in the case of the bottom 80 % of the population, as it accounted for some 69.5 % of their total wealth.

Table 5
Composition of Household Wealth by Wealth Class in 1991

	<i>All</i> <i>Households</i>	<i>Top 1%</i>	<i>Next 19%</i>	<i>Bottom 80%</i>
<i>Real assets</i>	33.5	56.1	35.9	27.6
Real estate	28.1	43.7	30.1	24.0
Business equity	4.3	10.8	4.8	2.4
Valuables	1.1	1.6	1.0	1.2
<i>Financial assets</i>	4.5	6.6	5.0	3.7
Transactions and saving accounts	2.5	2.4	2.3	2.3
Government bonds	1.4	1.4	1.9	1.2
Private bonds, equities, mutual funds	0.6	3.2	0.8	0.2
<i>Financial liabilities</i>	0.7	0.2	0.6	0.8
<i>Real and financial assets*</i>	37.3	62.5	40.3	30.5
<i>Social security wealth</i>	62.7	37.5	59.7	69.5

Source: our calculations from SHIW-HA figures
(*) Net of financial liabilities.

Table 6
Composition of Household Wealth by Wealth Class in 2002

	<i>All</i> <i>Households</i>	<i>Top 1%</i>	<i>Next 19%</i>	<i>Bottom 80%</i>
<i>Real assets</i>	46.6	63.6	43.9	41.1
Real estate	39.2	41.9	37.6	37.9
Business equity	5.9	16.3	5.0	1.9
Valuables	1.5	5.4	1.3	1.3
<i>Financial assets</i>	7.4	14.1	7.6	5.5
Transactions and saving accounts	4.1	8.5	3.6	3.8
Government bonds	0.7	1.2	1.0	0.5
Private bonds, equities, mutual funds	2.6	4.4	3.0	1.2
<i>Financial liabilities</i>	1.2	0.4	0.6	1.6
<i>Real and financial assets*</i>	52.8	77.3	50.9	45.0
<i>Social security wealth</i>	47.2	22.7	49.1	55.0

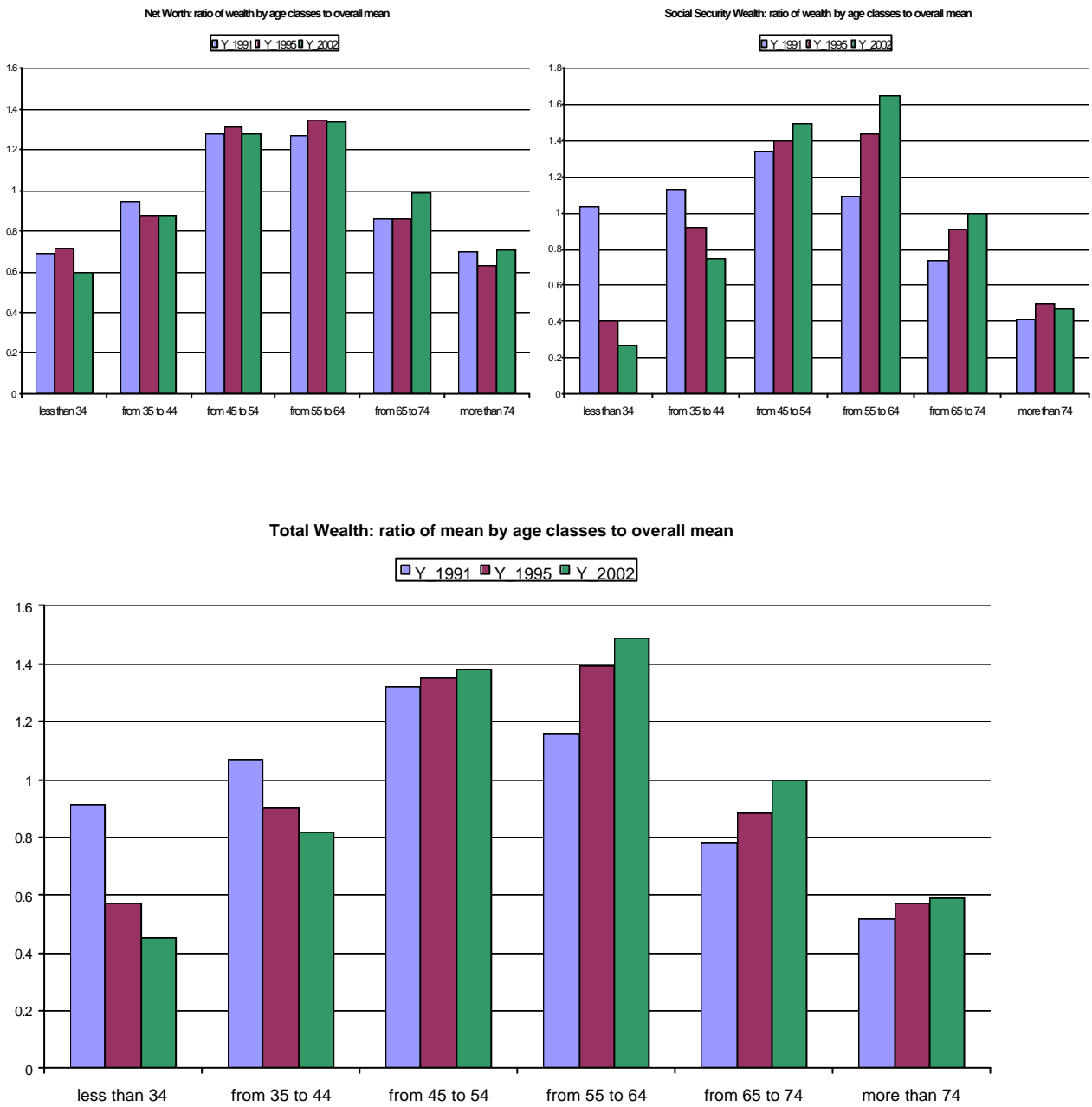
Source: our calculations from SHIW-HA figures.
(*) Net of financial liabilities.

Eleven years later the picture was rather different. Social security wealth accounted for a smaller share of total wealth fall all categories, while the weight of real estate rose sharply in the case of all

percentiles of the distribution with the exception of the richest one. The growing weight of net worth was particularly evident in the top 1 %, where the two items underlying the substantial increase in the share in real and financial assets were business equities and financial assets.

Figure 3 shows the ratio of net worth, social security wealth and total wealth (by age class) to the overall mean of the corresponding variable (1991, 1995 and 2002). Cross-sectional data such as those presented here as we all know, do not enable us to draw up a true life-cycle profile because of the simultaneous presence of age, time and cohort effects. Notwithstanding this limitation, figures show that at the beginning of the decade, the net worth held by elderly households (aged 65 and over) amounted to approximately 70-80 % of the overall mean. In the same year, the peak value of net worth (1.28) was reached by the 45-54 age-group. From 1991 to 2002 younger age groups saw their ratio drop from 69 to 60 %. If we now consider the age distribution of social security wealth, we see that the changes which took place during the decade were much more significant. In 1991 the younger households' ratio was approximately equal to one. The same ratio reached a peak (1.34) for the 45-54 age group and decreased thereafter. The picture was rather different after implementation of the two pension reforms, which particularly affected younger generations, especially those aged below 34 who saw their ratio fall to 0.4 in 1995 and to 0.3 in 2002. The very slow transition to the new pension system at the same time produced a relative improvement for adult generations, and in particular for those aged between 54 and 64. The shifts in the distribution of social security wealth over the past decade have also affected the changes in the ratio of mean total wealth by age classes to overall mean (see the lower part of Figure 3).

Figure 3
Age distribution of wealth



A further way to elicit those factors underlying changes in the size distribution of total wealth during the last decade is through the decomposition of inequality indices by homogeneous subgroups of the population. Our aim is to disentangle the inequality within groups from the inequality between groups. We used an index of the class of entropy measures, the half squared coefficient of variation, which can be obtained from the following general formula, when $\alpha = 2$:

$$E_a = \frac{1}{a^2 - a} \left[\frac{1}{N} \sum_{i=1}^N \left(\frac{w_i}{\bar{m}} \right)^a - 1 \right]$$

where N is the total number of households, w_i is the wealth of household i and \bar{m} is the mean value of wealth. One useful characteristic of this index is that it permits the exact decomposition of inequality by population subgroups even in the presence of negative values of wealth. In order to separate the “between” and “within” components, and at the same time to isolate the impact of the changes in population shares that occurred from 1991 to 2002, we have rewritten the half-squared coefficient of variation as follows:

$$E = E^W + E^B + E^P = \sum_{k=1}^K p_k \left(\frac{\bar{m}_k}{\bar{m}^*} \right)^2 E_k + \frac{1}{2} \left[\sum_{k=1}^K p_k \left(\frac{\bar{m}_k}{\bar{m}^*} \right)^2 - 1 \right] + E^P$$

where E^W is the within-groups component net of variations in relative group sizes, E^B is the corresponding between-group component, E^P is a residual term which deperates the effects on total inequality caused by changes in population share, K is the number of groups into which the population can be divided, p_k are the population weights calculated in the base year (2002), \bar{m}_k is the mean value of wealth for group k , and \bar{m}^* is the total mean at fixed weights according to the formula $\bar{m}^* = \sum_k p_k \bar{m}_k$.

The results of the decomposition of inequality into different population subgroups are presented in Table 7. The population (heads of households) has been sorted into five sociodemographic categories: area of residence, education, work status, age and gender. In keeping with the results obtained by Brandolini et al. (2004), who performed the same analysis on net worth, overall inequality in total wealth is mainly accounted for by the within-component, while the between-component appears to play a marginal role. This result holds for all our partitioning. For example, in 2002 the differences across households, grouped by area of residence, accounted for just 1.7 % of total inequality, while the remaining 98.3 % was determined by the inequality within each single geographical area. The contribution of the between-group component had been even smaller in previous years (with the sole exception of 2000), ranging from 0.5 in 1991 to 1.9 in 1995. The “education” category revealed the greatest between-group inequality; however, even in this case the within-group component played a much greater role.

Table 7

Decomposition of the Half-Squared Coefficient of Variation by Population Subgroup

Year	Within-groups at fixed weights		Between-groups at fixed weights		Group relative size effect		Total
	Value	Share	Value	Share	Value	Share	
<i>Area of residence (1)</i>							
1991	1,800	99.0	0.009	0.5	0.010	0.5	1,819
1993	1,601	97.8	0.013	0.8	0.022	1.4	1,637
1995	1,267	97.8	0.025	1.9	0.003	0.3	1,295
1998	1,671	98.7	0.022	1.3	-0.001	-0.1	1,692
2000	1,561	97.7	0.033	2.1	0.003	0.2	1,598
2002	1,780	98.3	0.030	1.7	-	-	1,810
<i>Education of household head (2)</i>							
1991	1,701	93.5	0.035	1.9	0.082	4.5	1,819
1993	1,538	94.0	0.062	3.8	0.037	2.2	1,637
1995	1,214	93.8	0.063	4.8	0.018	1.4	1,295
1998	1,615	95.5	0.060	3.5	0.016	1.0	1,692
2000	1,527	95.6	0.053	3.3	0.018	1.1	1,598
2002	1,757	97.1	0.053	2.9	-	-	1,810
<i>Work status of household head (3)</i>							
1991	1,978	108.7	0.054	3.0	-0.213	-11.7	1,819
1993	1,570	95.9	0.061	3.7	0.006	0.3	1,637
1995	1,267	97.9	0.042	3.2	-0.015	-1.1	1,295
1998	1,644	97.2	0.053	3.2	-0.006	-0.3	1,692
2000	1,557	97.5	0.033	2.1	0.007	0.4	1,598
2002	1,759	97.2	0.051	2.8	-	-	1,810
<i>Age of household head (4)</i>							
1991	1,819	100.0	0.029	1.6	-0.029	-1.6	1,819
1993	1,625	99.3	0.038	2.3	-0.027	-1.6	1,637
1995	1,311	101.2	0.039	3.0	-0.055	-4.2	1,295
1998	1,672	98.8	0.043	2.5	-0.023	-1.4	1,692
2000	1,560	97.6	0.039	2.4	-0.001	0.0	1,598
2002	1,767	97.6	0.043	2.4	-	-	1,810
<i>Gender of Household head</i>							
1991	2,002	110.1	0.042	2.3	-0.225	-12.4	1,819
1993	1,635	99.9	0.040	2.5	-0.039	-2.4	1,637
1995	1,306	100.9	0.037	2.9	-0.048	-3.7	1,295
1998	1,707	100.9	0.041	2.4	-0.056	-3.3	1,692
2000	1,579	98.8	0.022	1.4	-0.003	-0.2	1,598
2002	1,790	98.9	0.020	1.1	-	-	1,810

Source: our calculations from SHIW-HA figures.

(1) The three areas of residence are: Northern Italy, Central Italy, Southern Italy and the Islands.

(2) The three levels of education of household heads are: no formal education or primary school; middle school or high school; university degree.

(3) The five levels of work status of household heads are: blue-collar worker or office worker; senior official or manager; self-employed; pensioner; other (first-job seeker, unemployed, housewife, etc.).

6. Conclusions

This paper estimates an “augmented” measure of net worth including social security wealth, and it examines the composition and distribution of this augmented wealth among Italian households during the period 1991-2002. The main aim of this analysis is to evaluate the impact of the structural pension reforms introduced over the last decade on the distribution of total wealth. Our evidence is based on the last six cross-sections of the Bank of Italy’s Survey of Household Income and Wealth.

Augmented wealth was found to have fallen during the last decade as the combined result of two opposing factors, namely an increase in net worth (i.e. real and financial assets net of debts) and a stronger, parallel decline in social security wealth, due to the two main pension reforms introduced in 1992 and 1995. The rise of net worth is largely attributable to an increase in home-ownership and dwelling size, a rise in house prices, a shift in household portfolios towards risk-bearing assets, and the increase in stock market prices that marked the late 1990s. The key factors underlying the reduction in social security wealth were the abolition of indexation of pensions to real wages growth after 1991, which affected all current and future pensioners, together with the changes made to the computation of pension benefits, which mainly affected young workers and the self-employed.

After rising steeply at the beginning of the 1990s, augmented wealth inequality levelled off during the second part of the period. The major contribution to the initial rise came from social security wealth, the distribution of which, although less unequal than the distribution of real and financial wealth, widened during the first half of the decade at a much faster pace. In fact, the pension reforms implemented over the last decade seem to have reduced the equalising effect of social security wealth on augmented wealth.

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