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INEQUALITY ACROSS COHORTS OF HOUSEHOLDS: EVIDENCE FROM ITALY

Gabriella Berloffa
and
Paola Villa



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Inequality across cohorts of households: evidence from Italy

Gabriella Berloffà () and Paola Villa (*)*

Abstract

In this paper we examine the evolution of household equivalent income for "cohorts of households" defined by the age of the household's head, using Italian data from the Survey of Household Income and Wealth (SHIW), for the period between 1989 and 2004. The descriptive and econometric analysis reveals a deterioration of the economic conditions and prospects of young cohorts of households in comparison with older cohorts. This phenomenon is due to the joint occurrence of various events, like the institutional changes of the labour market, the poor economic performance of the economy and its adverse effects on white and blue collars, the new rules introduced for the pension system, and an exceptional increase in house prices and rents. Decreasing returns to education, the reduction in household size and the increase in the number of income recipients - due to both rising female participation and children living longer with their parents - are also found to have significant effects on the differences between cohorts at the same age.

JEL: D12, D30, J01, J10.

Keywords: Household Income, Inequality, Cohort Analysis.

* Department of Economics, University of Trento; email: gabriella.berloffa@economia.unitn.it

* Department of Economics, University of Trento; email: paola.villa@economia.unitn.it

1. Introduction

Worries about the deterioration of the economic conditions and prospects of young adults in comparison with older cohorts are supported by empirical evidence from various countries on both individual wages and household incomes.

With respect to household income, a worsening situation for young cohorts has been documented for a number of countries, mainly from LIS data. Smeeding and Sullivan (1998) consider the relative position of younger cohorts in the USA, Canada, the United Kingdom and Sweden in terms of household equivalent income. Based on their analysis, the young appear to be doing worse now relative to 20 years ago, while the aged are a mixed group across these nations, making continued progress in Canada and the United States and less so in Sweden and the United Kingdom. Clearly the picture changes if we consider different quintiles of the distribution within each cohort. As shown by Osberg (2003), the poorest quintile of Canadians and Swedes in each cohort is generally better off than the previous cohort at the same age. For the poorest twenty per cent of Americans and Britons, instead, each cohort has received a lower income than the previous cohort at the same age. The incomes of the top ten percent have risen relative to the income of earlier cohorts at the same age (more so for Britons and Americans; less so for Swedes). All cohorts experienced a real income decline in the 1990s. For Italy, there are no recent studies on household equivalent income by cohort, but the evidence available suggests a deterioration in the performance of the young relatively to the old cohorts. For example, Boeri and Brandolini (2004) show that during the 1990s households whose heads were either blue or white collars lost ground compared to households whose heads were self-employed or retired.

Household equivalent income depends on a large number of factors: household composition, number of earners, total hours of work, individual labour income, income from real and financial capital, etc. By far the main components of household income are individual wages for people of working age, and pensions for people in old age. To understand changes across cohorts in terms of household equivalent income, one needs to investigate, besides changes in household size and in the number of income recipients, trends in individual labour income (both entry wages and age-earning profile) and pensions, as well as labour market institutional reforms, since these may affect young and prime-age workers differently.

Several studies document a deterioration in individual earnings for young workers in a number of countries. The rate of growth of entry level wages for males have declined over time in the UK, with persistent effects because young cohorts have not caught up over their life times (Gosling, Machin and Meghir, 2000). Age-earnings profiles of Canadian men have been deteriorating for more recent cohorts, for both high school and university educated workers, with the most fortunate generation being the one born in the late 30s and early 40s (Beaudry and Green, 2000; Grenier, 2003). The wages of young workers have deteriorated slightly relative to old workers also in Germany within intermediate education groups (Fitzenberger et al., 2001). For Italy, younger generations have done better than previous ones on entry into the labour market, particularly those that entered in the 1960s; but the picture changed in the 1990s: those who entered the labour market in 1993 and 1995 did not benefit from higher entry wages, and they also experienced lower wage growth along the life cycle (Biagi, 2003). Rosolia and Torrini (2006) document an increase in the old-young wage differential in Italy during the

1990s which was common to all educational groups; but they also find that the deterioration in the relative position of younger cohorts, mostly due to a progressive decline of entry wages, was not compensated by any catch up (i.e. steeper age-earning profiles).

For Italy, there are further facts that make the picture even worse. Young cohorts experience major difficulties in entering the labour market, notwithstanding the employment growth recorded since the mid-1990s. The labour market's performance for young people remains poor compared to the Oecd average (i.e. in Italy youth employment rates are particularly low, and unemployment is high with long unemployment spells). Labour market institutional reforms, implemented to improve the employment opportunities of young workers, have given rise to a dual labour market. Subsequent regulatory reforms have mainly affected new entrants, while sheltering the working arrangements of old incumbent workers employed on open-ended contracts. Flexibility in entry level wages has been combined with greater flexibility in hiring conditions, with the result that an increasing share of young people are in atypical employment (fixed-term contracts, employer-coordinated free-lance work) (Biggeri, 2006). These changes are likely to have affected young workers' earnings negatively.

Moreover, recent reforms of the pension system have opened a gap between generations in terms of pension entitlements. The old cohorts maintain, at least partially, their rights according to the old rules (based on a defined-benefit scheme), they still enjoy generous pension benefits and the possibility of early retirement (*seniority pension*). The young cohorts will have meagre pension benefits (entirely based on a notional defined-contribution scheme). They are required to have longer career lengths and an older age for retirement, but they will also have to save a larger share of their current labour income to complement their future pension benefits (from the statutory scheme) with supplementary social security entitlements.

Furthermore, the housing market has undergone significant changes that affect young and old cohorts differently. Traditionally, ownership is preferred to tenancy in Italy. And the changes that have occurred in the housing market over the last fifteen years resulted in a further increase in the already large share of home ownership, further limiting the supply of houses to rent. Housing prices and rents have markedly increased, while household average disposable income has stagnated, especially for the younger cohorts. Increases in house prices have led to an increase in homeowner's wealth, but it has also led to higher costs of housing services (interest to be paid on loans and rents). And the higher cost of housing services are likely to have a major impact on the younger households, those in search of affordable accommodation.

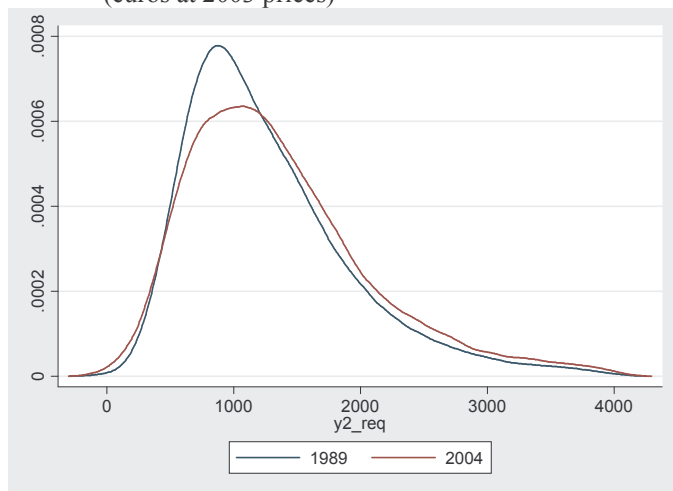
This paper intends to document the differences across cohorts in terms of household equivalent income for Italy. We begin, in Section 2, with a descriptive analysis of the changes that occurred in the distribution of household equivalent income from 1989 to 2004. Before presenting the evolution of household equivalent income for different cohorts, in Section 3 we describe the institutional framework characterising different cohorts over their life-cycle. In Section 4 we document how labour market conditions, social security rights and housing costs have affected different cohorts in the last fifteen years. In Section 5 we use a regression analysis to measure the impact of specific factors on the differences between and within cohorts. Section 6 concludes.

2. The distribution of household equivalent income: 1989-2004

We start by documenting what has happened to the distribution of household equivalent income in Italy over the last fifteen years. We use data from the Survey of Household Income and Wealth (SHIW), a nationally representative survey carried out by the Bank of Italy since 1965. Data are taken from the Historical Archive and refer to the period between 1989 and 2004¹, with two-year intervals except from 1995 to 1998. The definition of household income that we use is very broad, including wages and salaries, income from self-employment, pensions, public and private transfers, income from real and financial assets (net of interest paid on mortgages), and imputed rental income from owner-occupied dwellings. All components are net of direct taxes and social security contributions. We obtain monthly real net household income by dividing self-reported annual amounts by 12 and by the Household final consumption Expenditure Deflator (HED) available in national accounts. To obtain equivalent income, we use the OECD modified equivalence scale which assigns value 1 to the first adult, 0.5 to any other person aged 14 or older, and 0.3 to any person younger than 14.

Figure 1 shows the non-parametric estimates of the density function of real equivalent income for 1989 and 2004: the distribution has moved slightly to the right (the median increased by 10%), and the variance of the distribution has increased, with similar tiny gains for the whole distribution except for the bottom two deciles (see tab. 1).

Fig. 1: Non-parametric density functions of real monthly equivalent income in 1989 and 2004
(euros at 2003 prices)



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. 1: Changes in various percentiles of equivalent income distribution (%)

	p10	p20	p25	p50	p75	p80	p90	Mean
1989-2004	-3.6	1.2	5.0	9.9*	8.8	9.1	13.0	11.6*
1989-1993	-16.3	-12.6	-10.4	-4.6*	-2.5	-2.7	1.1	-4.7*
1993-2004	15.3	15.8	17.3	15.2*	11.5	12.2	11.7	17.1*

Notes: * statistically significant differences at 5% (confidence intervals have been computed only for mean and median).

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

¹ We do not consider years prior to 1989 because there have been changes in the sample design of the survey and in some characteristics recorded at the individual level which we use in our analysis.

This pattern is the result of very different trends in two sub-periods: from 1989 to 1993 all deciles except the top one experienced real losses, while from 1993 to 2004 all deciles gained in real terms (see fig. A1 in the appendix)². Both the losses in the early 1990s and the subsequent gains were (relatively) larger for the bottom part of the distribution (see tab. 1). However, the recovery was not enough to take the bottom decile back to its 1989 level (for a clearer picture of the evolution of the various deciles over time see fig. A2 in the appendix).

Although almost all deciles were characterised by a loss in the early 1990s and a general recovery after 1995, different population subgroups – defined by some household characteristics - may have been affected differently by the deceleration of income growth experienced in recent years. Boeri and Brandolini (2004) investigated the distribution of household equivalent income between 1993 and 2002, decomposing households by social group as defined by the labour market position of the household's head. They documented an improvement of the economic conditions of households headed by self-employed workers, managers and retired persons, and a worsening for the households of production and clerical workers, including school teachers. This decomposition by population subgroups identified on the basis of the household's head occupational status, showed that behind the apparent stability of aggregate inequality there were off-setting movements.

Our conjecture is that the decomposition by “cohorts of households”, as defined by the age of the household's head, may reveal significant differences in income dynamics across households, with younger ones losing ground to older ones. These differences may reflect both different economic performances and different institutional settings during the historical periods in which people lived. On average real GDP rose by 2.4% in the 1980s, but only by 1.6% in the 1990s, and just by 0.7 per cent in the most recent years. This weak growth has been associated to a productivity slowdown, a remarkable employment growth, and therefore to a noticeable decline in real wages. The institutional changes introduced in both labour market regulation and the social security system during the 1990s, have affected individuals differently according to their age and years of work-experience. Furthermore, the cost of housing services – hence its share on household's disposable income – markedly increased, leading to significant differences across households according to whether they already owned a house or not. Finally, households in different cohorts differ in terms of demographic structures (size of the household unit, number of income recipients³), and these characteristics may have a large impact on equivalent household income.

In our analysis we document how labour market conditions, social security rights and housing costs have affected different cohorts in the last fifteen years. We then use a regression analysis to measure the impact of specific factors on the differences between and within cohorts. Before going into details, we describe in the next section the institutional framework characterising different cohorts over their life-cycle, and present the evolution of their household equivalent income from 1989 to 2004.

² The distinction between the early 1990s and the subsequent period was also stressed by Boeri and Brandolini (2004), who showed that inequality in equivalent income worsened in the early 1990s, and remained quite stable thereafter.

³ Sex of head is not relevant because we restrict the analysis on households with a male head.

3 A descriptive analysis by cohorts of households

3.1 *The institutional framework characterising different cohorts over their life-cycle*

We construct five cohorts according to the year of birth of the (male) head⁴: households whose head was born between 1921 and 1930 (which will be named cohort 1), 1931-1940 (cohort 2), 1941-1950 (cohort 3), 1951-1960 (cohort 4), 1961-1970 (cohort 5). Table A1 in the appendix presents some information on the five cohorts considered here: cohort size, educational levels, labour market conditions at the time of entry into the labour market and in prime age, as well as the main changes in the labour market regulatory system. The information provided in table A1 does not intend to be exhaustive; its purpose is instead to sketch the major differences across cohorts in order to give insights into their specific working life experiences. As different cohorts' working lives overlaps (in the same time period), table A2 reports some general information on the average macroeconomic conditions prevailing in the last four decades.

Italy has experienced a significant increase in the educational levels of the population: younger cohorts have much higher educational levels than older cohorts, although they are low in comparative terms (Checchi, 1997). Like most European economies, Italy has undergone a number of demographic shifts. The baby-boom peaked around the mid-60s, then the birth rate declined mildly up to the mid-70s, it dropped dramatically until 1995 and then fluctuated around a very low birth rate. As a result, the ratio of the youth population to the adult population increased during the 1970s and 1980s and has started to fall in recent years. Unemployment rates for young people increased significantly after the first oil shock until the late 1980s, then slightly decreased in the following period. With the exception of the post-war period, unemployment for prime age men has always been very low, though increasing marginally in the last decade.

The cohorts born in the 1920s and 1930s entered active life in the 1940s and 1950s. In that period, the labour market was characterised by underemployment, high unemployment (7-8%, with a peak of 8.7% in 1956) and large internal migration. For these cohorts, entry into the labour market occurred at an early age (for a large number, at the age of 14). Given the backward economic conditions of the country in the post-war period and the lack of labour market regulation, large numbers experienced employment in the underground economy (i.e. without social security contributions being paid). This helps explain the high employment rate at old age recorded for these cohorts.

The cohorts born in the 1940s and 1950s entered active life in the 1960s and 1970s. These cohorts enjoyed the privilege of "employment for life". But while entry into the labour market was easy in the 1960s (albeit at the cost of internal migration for a large number of workers), as the economy grew at a high rate, entry into the labour market started to become difficult in the 1970s, and an increasing number of young people (i.e. the cohorts born in the 1950s) experienced long-term unemployment in their youth. However, once access to a job had been achieved, the risk of unemployment was extremely low and the degree of protection granted to regular employees was high.

⁴ The choice of this criterion to identify cohorts of households is motivated by the need to use a characteristic that is as stable as possible over time. Therefore, we assigned a male head whenever the self-reported head was a female but had a male partner, and we excluded those households in which the head was a female and was not part of a couple.

Moreover, the rules governing the pension system became generous, assuring certain future benefits. Thus, for the cohorts born in the 1940s and 1950s access to standard employment (full-time, indeterminate duration contract) could ensure income security both in working age and after retirement.

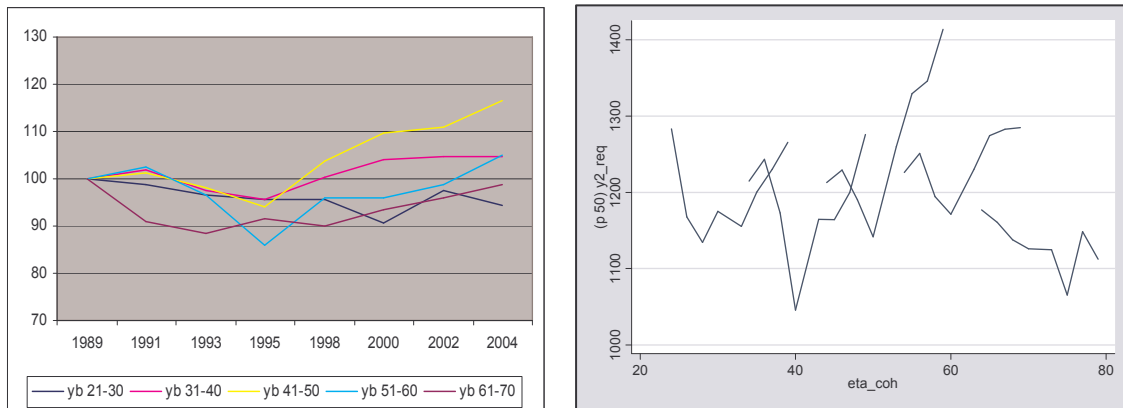
The cohort born in the 1960s is that of the baby-boom period. These young adults started entering the labour market in the 1980s: unemployment was on the increase, but very concentrated among youths, who experienced very long unemployment spells. People born in the 1960s are better qualified (in terms of education), their working lives have begun at a much older age with respect to their parents (i.e. the cohort born in the 1930s), not only because they have stayed longer in education but also because they have experienced long unemployment spells (as first job seekers). Furthermore, this is the first cohort to have been affected by the piecemeal deregulation of the labour market that began in 1984. When they have succeeded in entering employment this is no longer for life, their entry wages are significantly lower (with respect to previous cohorts) and their career prospects are uncertain. Moreover, the changes made to the pension systems in the 1990s (in particular, the shift from a generous defined-benefit scheme to a notional defined-contribution scheme) will result in significantly lower pension benefits for the cohorts entering the labour market after 1995. They know that they will have to work much longer, and to save a larger share of their current income, in order to gain access to a lower pension in retirement age.

3.2 The evolution of household equivalent income for different cohorts

Keeping these different stories in mind, we now examine the evolution of household equivalent income for these cohorts between 1989 and 2004⁵. The first striking feature in figure 2 is the different evolution of median income for the households whose head was born in the 1940s compared to all other cohorts: their median income increases by about 20% whereas for all other cohorts it remained roughly stable (with variations ranging from -6.5% for the oldest to +5% for those born in the 1950s). The cohorts who experienced the greatest losses during the first half of the 1990s are the youngest ones; they both recovered towards the end of the decade and at the beginning of the new century but this recovery was just enough to take them back to the 1989 level. The oldest cohort showed a decline in the early years of the century, probably due to an age effect. Indeed, if we plot the median equivalent income of the various cohorts as a function of the cohorts' age (defined as the difference between the survey year and a single year of birth for each cohort: 1925 for cohort 1, 1935 for cohort 2, etc.), positive cohort effects can be clearly identified only for the older cohorts, whereas the younger ones have gained over the previous cohorts only in the very last period of observation. Furthermore, a sort of life-cycle pattern emerges only for ages above 55, but not for the initial period of life.

⁵ Recall that, for the youngest cohort, we consider only those individuals who left their parents' home to form a family or to live on their own.

Fig. 2: Median real monthly equivalent household income by year (left, 1989=100) and by age (right, euros at 2003) for various cohorts



Notes: Cohorts are defined by the year of birth of the household's head.
Source: Authors' calculations on data from the SHIW-HA (release 3.0).

The aim of the paper is to shed some light on the phenomena that lie behind these differences. The first and easiest explanation regards family composition. Indeed, one can observe that the cohort with heads born in the 1940s during the period that we consider, reached the final period of the working life (from age 44 in 1989 to age 59 in 2004), so that their performance can be explained by simple life-cycle considerations, such as a decrease in family size due to children leaving home. The importance of this factor can be analysed by examining the behaviour of equivalence scales. As one can see from table 2, the mean of the equivalence scale decreased significantly for cohort 3, but the decline in the scale is much larger for cohort 1 and 2 than for cohort 3. This suggests that if the increase in equivalent income for cohort 3 was simply due to a reduction in family size, this increase should have been even larger for households whose head was born in the 1920s or in the 1930s.

Table 2: Cohorts means of household equivalence scales, 1989-2004

	cohort 1 (1921-30)	cohort 2 (1931-40)	cohort 3 (1941-50)	cohort 4 (1951-60)	cohort 5 (1961-70)
1989	1.86	2.27	2.25	1.89	1.69
1991	1.87	2.23	2.27	1.92	1.74
1993	1.79	2.19	2.31	2.02	1.75
1995	1.73	2.08	2.31	2.07	1.77
1998	1.59	1.90	2.24	2.11	1.80
2000	1.56	1.82	2.19	2.12	1.83
2002	1.56	1.77	2.12	2.16	1.82
2004	1.54	1.67	2.05	2.13	1.85

Note: Cohorts are defined by the year of birth of the household's head.
Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Moreover, the family size for different cohorts at the same age decreased, as one can see from table 2⁶, suggesting that, *coeteris paribus*, there should be positive cohort effects for younger cohorts due to a reduction in family size. Again, this effect is not evident in

⁶ In order to see this one needs to compare the scale for cohort(*i*-1) in 1989-1991 with the one for cohort(*i*) in 2000-2002).

figure 2. In other words, the particular performance of cohort 3 cannot be attributed solely to changes in family composition, but other factors must have played a role: different weights of various households' income components across cohorts, different numbers of income recipients, structural changes in the age-earnings profile of different cohorts, or in pension benefits, etc. These factors will be analysed in the next section.

4. The evolution of different sources of income

Although the composition of household income for the cohorts considered here is quite different, the main sources of household income are earnings and pension benefits (see table 3). Households in cohort 1 rely mainly on pension income in all years but the initial ones; cohort 2 is characterised by the transition to retirement, with the median share of labour income going from 82% to 0%, and that of pension income from 0% to 68% over the years considered. For the other cohorts the main source of income is earnings, but while cohort 4 and 5 have percentages that remain between 80% and 90%, for cohort 3 the transition to retirement starts in the late 1990s and the early years of the new millennium. The share of (real) capital income⁷ ranges from 10% to 20%, with an increasing trend for all cohorts, which results in a larger share of capital income for younger cohorts at the same age. It is therefore interesting to examine the evolution of these different types of income in the last fifteen years.

Table 3: Median shares of various income components by cohort, 1989-2004

	1989	1991	1993	1995	1998	2000	2002	2004
cohort 1 (1921-30)								
Labour income	0.14	-	-	-	-	-	-	-
Transfer income	0.51	0.62	0.66	0.71	0.71	0.74	0.74	0.74
Real capital income	0.14	0.14	0.16	0.17	0.18	0.19	0.19	0.22
cohort 2 (1931-40)								
Labour income	0.82	0.75	0.58	0.45	0.25	-	-	-
Transfer income	-	-	0.18	0.30	0.44	0.55	0.62	0.68
Real capital income	0.11	0.12	0.14	0.17	0.17	0.18	0.19	0.20
cohort 3 (1941-50)								
Labour income	0.86	0.84	0.79	0.77	0.74	0.71	0.67	0.55
Transfer income	-	-	-	-	-	-	-	0.22
Real capital income	0.12	0.12	0.15	0.16	0.15	0.16	0.27	0.18
cohort 4 (1951-60)								
Labour income	0.90	0.88	0.85	0.81	0.81	0.83	0.82	0.81
Real capital income	0.10	0.11	0.13	0.16	0.15	0.15	0.16	0.16
cohort 5 (1961-70)								
Labour income	0.93	0.86	0.86	0.83	0.83	0.81	0.82	0.83
Real capital income	0.07	0.13	0.12	0.17	0.15	0.16	0.16	0.17

Notes: Cohorts are defined by the year of birth of the household's head. Median shares of transfer income for cohort 4 and 5 are 0 in all years.

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

⁷ This includes received and imputed rents.

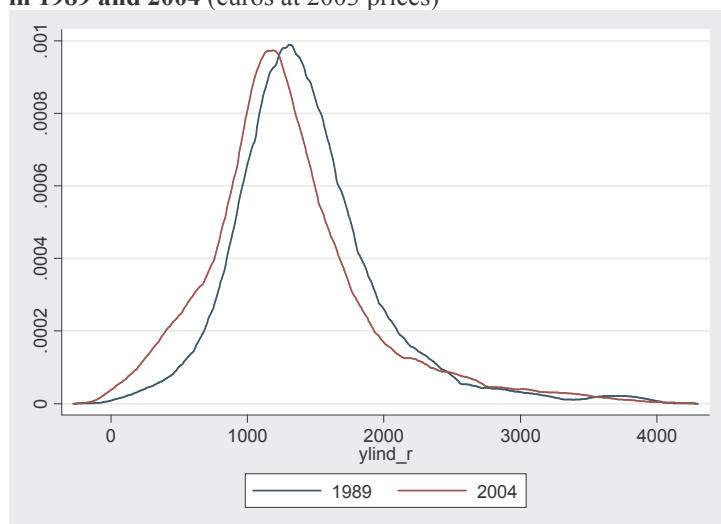
4.1 Labour income

In order to describe the phenomena that have characterized labour income in the last fifteen years, we first describe what has happened to individual earnings and then discuss the role of changes in the number of earners within the family.

Figure 3 shows that from 1989 to 2004 the distribution of *individual* labour income for dependent workers (expressed in real terms) moved leftwards, with a significant increase in the share of people in the low part of the distribution. As one can see from fig. A3 in the appendix, the latter is mainly the result of the recession in the early 1990s⁸, whereas the horizontal shift is clearly visible after 1993, i.e. the reduction in average wages cannot be attributed only to the recession of the early 1990s, but is a phenomenon that persisted over the entire period, mainly because of the moderate growth of economic activity and the productivity slowdown (see tab. A2 in the appendix). Table 4 confirms that all percentiles of the distribution show a significant reduction from 1989 to 2004, with the exception of the top decile. The bottom decile decreased by 30% in 15 years! The overall picture does not change if we add females and/or income from self-employment (see tab. A3 and tab. A4 in the appendix).

This general fall in real wages is partly due to the tripartite income policy agreements of 1992 and 1993, which abolished the wage indexation mechanism (*scala mobile*) and reformed the collective bargaining system. These institutional changes stopped the wage inflation spiral and began a long period of wage moderation, leading to a noticeable decline in the aggregate wage share (Brandolini et. al., 2007). The lasting wage stagnation combined with a piecemeal reform of the labour market, favoured a remarkable growth in employment (since 1995) characterised by an increasing elasticity of employment. However, as employment growth combined with a slowdown in productivity growth, the outcome was a fall in real wages (Tronti 2007).

Fig. 3: Non-parametric density functions of individual labour income for male dependent workers in 1989 and 2004 (euros at 2003 prices)



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

⁸ The recession of 1992-93 is widely acknowledged as being the most severe in the post-war period in terms of job losses.

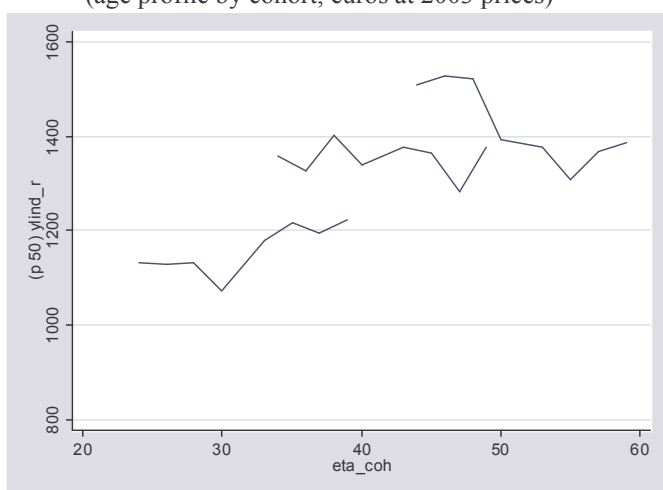
Tab. 4: Percentiles of individual monthly labour income for male dependent workers
(euros at 2003 prices for the first row; index number in other rows)

	p10	p25	p50	p75	p90
1989	905.5	1131.8	1358.2	1660.0	2112.8
1989	100.0	100.0	100.0	100.0	100.0
1991	95.3	93.8	97.7	99.9	94.2
1993	65.8	89.5	96.5	100.5	105.5
1995	59.2	85.2	90.7	96.8	98.9
1998	54.3	84.7	90.4	89.2	93.0
2000	61.9	82.6	89.5	90.1	92.9
2002	66.0	83.0	88.1	91.4	98.0
2004	70.2	86.4	90.0	93.3	100.3

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

In order to see how the general decline in real wages affected different cohorts, in figure 4 we plot the age profile of median earnings for males born in the 1940s, in the 1950s and in the 1960s. Although over the period considered median earnings increased for the youngest cohort, remained stable for those born in the 1950s and decreased for those born in the 1940s, the negative cohort effect for younger cohorts is striking. The size of the effect is reported in table 5: at the age of 45, males born in the 1950s had 10% lower earnings than males born in the 1940s; a similar negative difference emerges for males born in the 1960s and in the 1950s at the age of 35. Female wages are characterized by a similar pattern, but the magnitude of the cohort effects is somewhat different: the gap between females at the age of 45 is smaller than the one for males (-5.4%), whereas the gap at the age of 35 is larger (-14.4%).

Fig. 4: Median individual monthly labour income for male dependent workers
(age profile by cohort, euros at 2003 prices)



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. 5: Median male and female monthly wages for different cohorts at the same age
(euros at 2003 prices)

age	cohort 3	cohort 4	cohort 5	Gap (%)
<i>Males</i>				
45	1517.6	1364.7		-10.1
35		1342.6	1215.2	-9.5
<i>Females</i>				
45	1200.8	1135.7		-5.4
35		1200.8	1028.3	-14.4

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Thus, the data show a noticeable negative cohort effect in terms of individual labour income for younger cohorts. This is a well known result, supported by other empirical analyses. Biagi (2003), using SHIW data, constructed cohort specific age profiles for mean wages (for male full-time employees). The analysis shows significant cohort effects: each successive cohort has been doing better than previous ones on entry into the labour market. The estimated cohort effect, which can be interpreted in terms of an increase in the entry wage, is very pronounced for the cohorts that entered in the 1960s (born in the 1940s). But the cohort effect disappears for those that entered the labour market in 1993 and 1995 (born towards the end of the 1960s)⁹. Furthermore, the wage growth along the life-cycle is smaller for the younger cohorts relatively to older cohorts. This is confirmed also by Rosolia and Torrini (2006) who show, using administrative records, that lower entry wages for the younger cohorts are not compensated by faster career paths (i.e. age profiles are becoming flatter).

To sum up, the analyses available support the view that younger cohorts (the new entrants in the labour market in the period considered here) experienced a sizeable wage loss with respect to cohorts entered in previous decades. This can be interpreted as the result of two different effects, pushing in the same direction, that is, reducing relative earnings of younger workers. On the one hand, the partial reforms of labour market regulation, enacted gradually since 1984 (see tab. A1), have progressively reduced entry wages. On the other hand, the structural changes in the wage bargaining system have modified the wage career profiles.

In the last two decades piecemeal labour market institutional reforms have been passed to foster labour market flexibility, and hence to improve the chances of young people of entering employment. A major regulatory change was the introduction in 1984 of the work-and-training contract (*contratto di formazione e lavoro*, CFL), a fixed-term contract with reduced social contributions, a lower entry wage¹⁰ and no firing costs (with respect to open-ended contracts) to be used for the hiring of young unemployed (aged less than 30). In 1991 some limitations were imposed on the incentives attached

⁹ A recent study by Rosolia and Torrini (2006) confirms a progressive decline in entry wages during the 1990s. Drawing on SHIW data, they estimate that entry wages grew throughout the 1980s, then declined in the mid-1990s, returning to the average level recorded in the late 1970s and remained fairly stable thereafter, at a level which is 30% lower than in the late 1980s. The authors supplement their analysis using data from a longitudinal sample of administrative records: they show that entry wages of workers who entered at the age of 21-22 grew between 1976 and 1991 (by 37%), but declined between 1991 and 2002 (by 11%).

¹⁰ Firms were allowed to hire the worker at a lower skill grade (two steps down) with respect to the one prescribed by the national collective agreement (on the basis of his/her qualification).

to CFL, progressively restricting the use of these atypical contracts for the hiring of new entrants. But the reduction in the diffusion of CFL has been more than off-set by the use of other forms of atypical employment contracts. Though these other non-standard forms of employment are not restricted to young workers, as a matter of fact they have by and large been used for newly hired workers¹¹. This implied not only a fall in entry wages but also a polarisation of the labour force between the bulk of old incumbent workers with high probability of being employed in secure, open-end contracts, and younger workers with high probability of being employed in non-standard forms of employment.

Besides the changes in labour market regulation which have prompted greater flexibility in entry wages and hiring conditions, the tripartite income policy agreements of 1992-93 led to extraordinary moderate wage dynamics that resulted in the opening of wage differentials. It should be said that the distribution of earnings narrowed significantly from the late 1970s until the end of the 1980s, but it suddenly widened in the early 1990s (Brandolini, Cipollone and Sestito 2002). The widening of wage differentials in the 1990s seems to be related to changes in the wage-age profiles. Contini and Trivellato (2005, p. 77), when discussing long term trends in earnings inequality in Italy, underline the role played by collective bargaining in the opening of wage differentials by age. Empirical analyses (Borgarello and Devicienti 2002; Devicienti and Maida 2005) support this interpretation. According to these authors, the dynamics of earnings resulted in a higher return for work experience, to the advantage of older workers. In other words, changes in wage bargaining resulted in a widening of wage differentials by age, as they have pushed the return to seniority and experience upwards.

Even though households may comprise individuals from different cohorts, it is reasonable to think that on average the characteristics of individual earnings for the cohort to which the head belongs are predominant. We can see the consequences of these patterns of individual wages for household equivalent income of each cohort over time, and for the differences between cohort at the same age.

Tab. 6: Household distribution according to the number of earners for different cohorts (%)

no. Earners	cohort 4 (1951-60)		cohort 5 (1961-70)	
	1989	2004	1989	2004
0	1.29	1.82	1.87	1.33
1	51.38	36.65	47.15	42.33
2	47.05	49.22	50.59	55.86
3	0.12	10.56	0.2	0.48
4	0.16	1.75	0.2	-
	100.00	100.00	100.00	100.00

Notes: Proportions are computed only with respect to households in which couples are present.
Source: Authors' calculations on data from the SHIW-HA (release 3.0).

¹¹ The share of fixed-term contracts in the flows of newly hired workers rose from 28 to 40% between 1993 and 2003 (while their share on the stock of employees rose from 6 to 10%) (Brandolini et al. 2007, p. 53). Indeed, jobs as independent contractors (used for new working arrangements such as employer-coordinated freelance work) spread among young workers since 1995, as well as employment in temporary agency work since 1997 (the enactment of the *Legge Treu*), and in fixed-term contracts since 2001 (following the relaxation of their use allowed by the new law).

Tab. 7: Mean and median equivalent household labour income for different cohorts
(euros at 2003 prices)

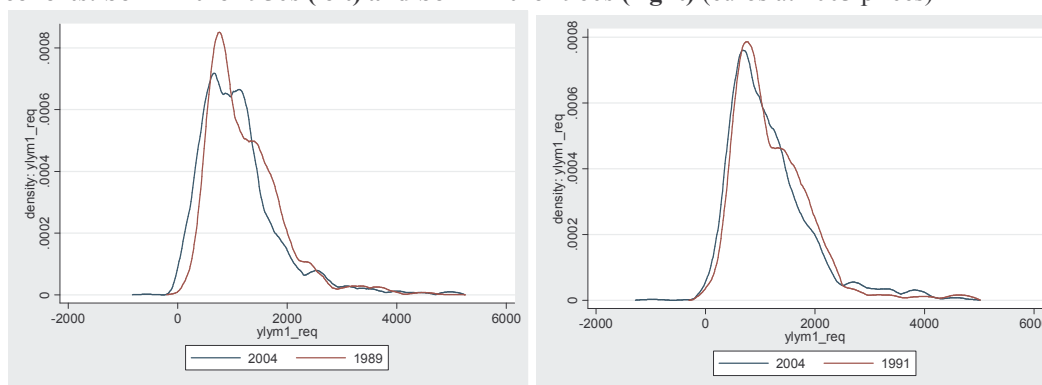
	mean		median	
	cohort 4	cohort 5	cohort 4	cohort 5
1989	1257.2	1277.1	1056.4	1167.8
1991	1169.5	1213.5	1054.5	1061.6
1993	1096.3	1123.7	933.8	976.8
1995	970.2	1086.4	841.7	928.5
1998	1038.5	1111.3	933.6	955.4
2000	1089.8	1109.7	934.7	995.7
2002	1111.6	1155.3	958.6	996.6
2004	1160.6	1274.9	992.2	997.5

Notes: The difference between 1989 and 2004 is significant for cohort 4 (mean at 6.7%, median at 5%), but not for cohort 5 (neither mean nor median).

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

As regards the first point, beside the increase in individual wages, the youngest cohort experienced an increase in the proportion of households with more than one earner (tab. 6), part of which may be due to the late entrance into the cohort of couples with higher levels of education, which are more likely to have two earners¹². At the same time, the increase in the equivalence scale (tab. 2), due to the increase in the number of children, implied that mean and median equivalent household labour income in 2004 were not significantly different from those in 1989 (see tab. 7 and fig. 5)¹³. Similar conditions characterized cohort 4, but in this case equivalent labour income decreased between 1989 and 2004 even if there was a significant increase in the proportion of households with three earners (see tab. 6).

Fig. 5: Non-parametric density functions of equivalent household labour income for different cohorts: born in the 1950s (left) and born in the 1960s (right) (euros at 2003 prices)



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

As regards the difference between cohorts at the same age, table 8 shows the proportion of households with various numbers of earners for different cohorts at the same age. There are no significant differences between cohort 4 and 5 at the age of 35, whereas

¹² The proportion of households whose head had a university degree increased from 5.4% in 1989 to 9.4% in 2004, those with a secondary school diploma increased from 34% to 37.7%.

¹³ The increase in the number of earners implies a reduction in the quantity of leisure enjoyed at the household level, and therefore, even if monetary income has not changed, household welfare may have reduced significantly.

the proportion of households with two earners is significantly higher for cohort 4 compared to cohort 3 at the age of 45, but the proportion of three-earner households is significantly lower¹⁴. We have already seen that equivalence scales are somewhat lower for successive cohorts (at 45, mean equivalence scale for cohorts 3 and 4 is 2.26 and 2.12 respectively, whereas at 35 for cohorts 4 and 5 we have 1.91 and 1.83). However, this effect is not big enough to compensate for the loss in real wages, with the consequence that household equivalent labour income is about 10% lower for younger cohorts (see tab. 9)

To sum up, the changes in institutional arrangements (i.e. the two-tier labour market reforms and the changes in the wage setting mechanisms), the moderate growth of economic activity and the productivity slowdown resulted in a disappointing performance of labour incomes in 1989-2004. The stagnation of real wages hit younger cohorts more severely than older ones, as they experienced not only a significant drop in entry wages but also a slower wage progression. This meant increasing difficulties for these cohorts in forming a family, and in having and raising children¹⁵. Indeed, household size is lower for successive cohorts, but this effect – together with the increase in the number of earners within the family – is not big enough to compensate for the loss in real wages. As a consequence, household equivalent labour income is about 10% lower for younger cohorts.

Table 8: Household distribution by number of earners and age of the head

no. earners	Age 35		Age 45	
	Cohort 5*	Cohort 4**	Cohort 4*	Cohort 3**
0	1.50	1.05	1.34	1.18
1	47.23	49.16	40.83	44.92
2	51.04	49.27	52.47	44.89
3	0.16	0.46	4.16	7.57
4	0.00	0.08	1.11	1.39
	100.00	100.00	100.00	100.00

Note: *: proportion in 2000. **: Average proportion over the years 1989 and 1991. In this table we have considered only households in which couples are present.

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. 9: Mean and median equivalent household labour income for different cohorts at the same age (euros at 2003 prices)

age	cohort 3	cohort 4	cohort 5	Gap (%)
Mean				
45	1168.1	1052.0		-10.0%
35		1189.4	1055.6	-11.3%
Median				
45	984.2	929.3		-5.6%
35		1042.6	934.7	-10.4%

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

¹⁴ This is probably due to both the delay of the time of marriage for successive cohorts, and the delay of the time of entering the labour market for the oldest child in the household.

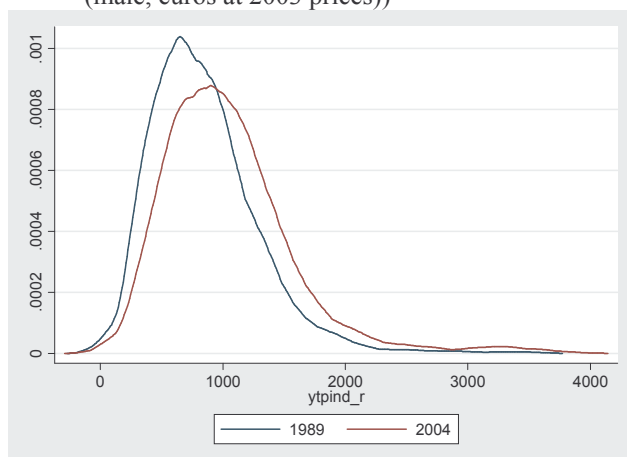
¹⁵ Young Italians are considerably more likely to live with their parents than are their European counterparts, as they postpone leaving their parental home and forming a family even beyond the age of thirty. This phenomenon, already extensive in the late 1980s, has been increasing in the period considered (Facchini and Villa, 2005).

4.2 Pension income

A completely different picture emerges if we look at the evolution of pensions. Figure 6 shows a clear rightward shift of the distribution of pension income from 1989 to 2004, which occurred mainly after 1995. As a result, all percentiles of this distribution have increased, from 8% for the bottom decile to 20-22% for the median and the percentiles above it (see tab. 10).

Clearly this pattern may be the result of a constant increase in individual pensions over time, or of higher pensions for successive cohorts. As one can see from individual data for males, the level of pensions for cohort 1 (which is not affected by composition effects in terms of successive retirement) is almost constant over time (see tab. 11). The shift in the distribution of pensions therefore seems due to higher pensions of successive cohorts of retirees. This is confirmed if we plot the median pension benefit for males of different cohorts at the same age: figure 7 shows major positive cohort effects for individual pensions. Clearly we can use only those years in which composition effects are likely to be small; i.e. in which more than 50% of individuals are retired; this means all years for cohort 1 and from 1995 onwards for cohort 2; for cohort 3, retired males are 27% in 2000, 34% in 2002 and 43% in 2004; therefore, data for this cohort can change as more individuals retire.

Fig. 6: Non-parametric density functions of monthly pension income in 1989 and 2004
(male, euros at 2003 prices)



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. 10: Percentiles of monthly pension income
(males; euros at 2003 prices for the first row; index number in other rows)

	p10	p25	p50	p75	p90
1989	392.4	451.2	637.6	902.4	1222.4
1989	100.0	100.0	100.0	100.0	100.0
1991	94.5	101.3	99.4	105.1	105.8
1993	91.1	99.6	91.1	103.0	107.1
1995	97.6	96.3	93.1	108.0	108.8
1998	97.7	99.1	105.2	110.6	112.4
2000	101.2	101.0	108.7	114.5	114.3
2002	107.5	118.1	115.6	120.6	118.1
2004	108.0	117.4	122.7	122.3	120.3

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

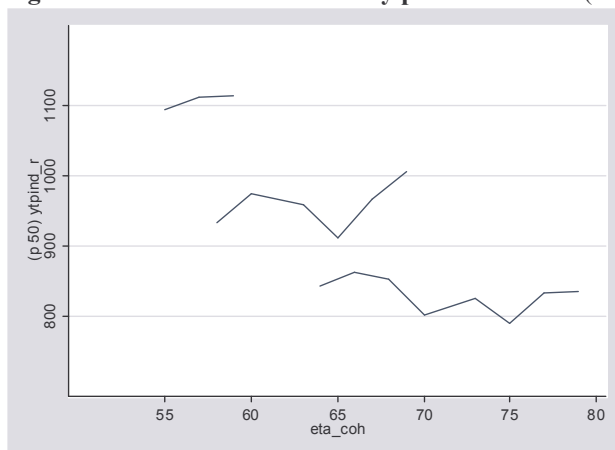
Indeed, the (males) retirees of cohort 2 (those born in the 1930s) can rely on individual pensions that are much higher than those of the previous cohort: pensions at 68 years of age for males from cohort 2 were 16% higher than for males from cohort 1. The reason for this can be traced back to the time when the Italian pension system was constructed and to the changes that occurred during the 1960s and 1970s. Construction of the pension system started in the second half of the 1950s, when individuals from cohort 1 had already been in the labour market for 10-15 years, whereas individuals from cohort 2 were just entering it. The pension schemes for public and private employees were frequently changed in the 1960s, the years of high economic growth, almost invariably increasing the generosity of the system. By the end of the 1960s, public pension coverage was extended to self-employed, work-disabled and elderly persons with low incomes¹⁶. In 1969, pension benefits for private sector employees started to be computed on the basis of earnings (final salaries). In 1971 pensions were indexed both to price increases and to the average real wage growth. These changes resulted in a very generous pension system for core workers, and they were seen as a major achievement in guaranteeing pensioners a high standard of living (preserving the standard of living enjoyed during active life).

Tab. 11: Mean and median monthly pension income (males born in 1921-1930; euros at 2003 prices)

	mean	median
1989	911.7	842.1
1991	924.0	862.5
1993	918.3	852.3
1995	908.5	800.8
1998	917.2	825.5
2000	903.1	789.8
2002	947.7	832.9
2004	947.9	834.9

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Fig. 7: Median individual monthly pension income (male age profile by cohort, euros at 2003 prices)



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

¹⁶ A number of benefits were introduced for the social purposes of protecting the more disadvantaged old people via cash transfers. These benefits include: supplementary benefit up to a minimum treatment for those receiving a pension below a given threshold; social pensions; social allowances for old people without other income and disabled. These benefits, included in pension expenditure, are classified as social assistance (and financed through general taxation).

Individuals from cohort 2 could therefore enjoy the full generosity of the system which was constructed as a pay-as-you-go (PAYGO) method¹⁷. Pensions benefits were determined on the basis of the average earnings over the last years of work: the last 10 years for self-employed workers¹⁸, the last 5 years for private employees, the wage of the final year of work for public employees. Besides generous old-age pensions, “seniority pensions” were introduced, allowing early retirement for private employees, once they reached 35 years of contributions (independently of age), with the benefit computed without considering differences in life expectancy at the different ages. Public employees enjoyed some privileges: for all public employees the reference wage was that of the final year at work; for several categories the coefficient used to compute pension benefits was higher than for private employees; moreover, the right to early retirement was more generous (it was possible once they reached 20 years of seniority, only 14 years six months and one day for women with two children).

Many individuals from cohort 3 will also enjoy the same generous social security rights. Since their labour income is higher than that of individuals belonging to previous cohorts, their pensions will also be higher. We have still little information on pensions for individuals from cohort 3, because only 34% and 43% of them were retired in 2002 and 2004, respectively. However, the data for these two years suggest that pensions for this cohort are significantly higher than those for previous cohorts: at 58 years of age, pension benefits for males from cohort 3 were 19% higher than those for males from cohort 2. Moreover, the reforms of the pension system that occurred in the 1990s (which will be described below) affected individuals from this cohort only marginally. Therefore, it is reasonable to expect that median pensions for cohort 3 will not be greatly different from what the data suggest for 2002 and 2004. In other words, this evidence suggests that over the time that we are considering, households whose head was born in the 1940s were progressively entering retirement, but with better conditions than previous cohorts, leading to a lower decline in household income due to retirement, and to a larger gap of household income between this and previous cohorts.

The pension system designed in the 1960s produced a rapid increase of pension expenditure¹⁹, also supported by a large diffusion of “invalidity pensions”, used as a substitute for the lacking unemployment benefit schemes (Ferrera 1996: 26-27)²⁰. At the beginning of the 1990s it became evident that that system was financially unsustainable, extremely unfair to some group of workers (enacting a form of perverse redistribution which is typical of “final salary” defined-benefit systems) and also characterised by

¹⁷ The Italian pension system of the first half of the twentieth century was a public funded system. The very high inflation rate of the post-war period almost entirely depleted the reserves and the system was changed into a public unfunded system (PAYGO).

¹⁸ A new rule for self-employed workers was enacted in 1990, which granted pension benefits proportional to the average earnings of the last 10 years of work (without modifying the payroll tax).

¹⁹ Pension expenditure increased from 5% of GDP in 1960 to 14.9% in 1992. According to Brugiavini (1999) demographic pressure explains only part of this trend: the generosity of the system, the timing of a large number of cohorts coming to maturity of their rights as well as the widespread phenomenon of early retirement (due to incentives embedded in the system) were mostly responsible (Brugiavini, Galasso 2003, p. 13).

²⁰ The growth of invalidity pensions was spectacular in the 1960s, especially in Southern Italy. Their number overtook that of old-age pensions in 1972, and reached a peak in 1982 with almost 5.4 million invalidity pensions (Ferrera, 1996: 26). In 1984 the rules for invalidity pensions were made stricter (restricted to the physical inability to work, instead of the general inability to produce income) (Baldini, Mazaferro, Onofri 2002, p.3).

strong incentives to retire early (allowing for seniority pensions) (Franco, 2002; Brugiavini and Galasso 2003). Major reform efforts were undertaken in the 1990s in order to stabilise public pension expenditure and to control the future spending dynamics.

A first reform law was passed in 1992 (known as the *Amato reform*): the indexation of pension benefits to real wage growth was abolished. The law established the principle of a stronger relationship with the amount of contributions paid during working life (by changing the reference wage to the average of the last 10 years, instead of the last 5 years, to be extended in the future to the whole working life); the privileges of public employees started to be dismantled; finally, it introduced the first framework for supplementary pension provisions. A second reform was passed in 1995 (the so-called *Dini reform*), enacting a radical change in the computation of the pension benefit: from the current defined-benefit scheme to a notional defined-contribution scheme, fully based on actuarial principles, applied within a PAYGO system. These new rules changed the design of the Italian pension system, though they were planned to become fully operational only after a very long transitional period. Thus, the implementation of the 1995 reform required further adjustments to produce an impact on expenditure trends. Implemented in 1997 (*Prodi reform*) was an acceleration in the equalisation of rules between public sector and private sector pension schemes. In 2004 (*Maroni-Tremonti reform*) the retirement age was raised on the basis of the increase in life expectancy (tightening the minimum eligibility requirements for retirement in the transition period).

The reforms of the 1990s modified three key features of the pension system: (i) benefit computational rules (from earnings related to contribution related schemes); (ii) indexation rules (benefits are no longer indexed to real wage growth); (iii) retirement age and eligibility criteria (modified on actuarial bases)²¹. As a result, pension reforms have reduced expectations concerning the future level of pension benefit. The replacement rate (i.e. the ratio between the first pension benefit and last wage) has been reduced: under the earnings related scheme (pre-1992 reform) a representative employee, retiring at the age of 60 (with 37 years of contribution) was expected to have a replacement rate of around 75%; under the contribution related scheme (after-1995 reform) the same individual is expected to have a replacement rate of around 58% (if an employee) and 35% (if self-employed) (Baldini, Mazzaferro and Onofri, 2002). Moreover, the changes introduced in the indexation mechanism will reduce the dynamic of pension benefits after retirement, leading to a progressive reduction in pension benefits.

As already pointed out, the implementation of the pension reforms is extremely gradual, with a very long transitional period. Workers with a contributory record equal to or exceeding 18 years on 31.12.1995 have their pension calculated with the old system; workers having entered the labour market before the end of 1995, but with less than 18 years of payment, have their pension calculated in part with the old and in part with the

²¹ Under the new system, benefits are calculated on the basis of contributions paid throughout the entire career and capitalised at the average growth rate of GDP over the previous five years. The value of the accumulated contributions is translated into a pension on the basis of actuarial equivalence, taking into account the remaining life expectancy at the retirement age. Retirement is possible between 57 and 65, but not before the worker has reached a pension level of at least 1.2 times the minimum “old-age allowance” (granted to people from age 65).

new system, according to the proportion of working life spent in the two regimes; all entrants in the labour market from 1996 will have their pension entirely computed according to the notional defined-contribution scheme. Hence, the reforms have created three different groups that have been hit to different degrees by the pension reforms, mainly according to the seniority of each worker at the time of the 1995 reform. The implications in terms of pension benefits for the cohorts we constructed are considerable.

We can reasonably assume that individuals from cohort 3 (born in 1941-50) entered the labour market in the 1960s at around the age of 20²²; individuals from cohort 4 (born in 1951-60) entered the labour market in the 1970s at a slightly older age (when they were around 22 years old); while individuals from cohort 5 (born in 1961-70) started working life at around the age of 24 in the mid-80s. All individuals from cohort 3 and most of those from cohort 4 entered the labour market before 1977 (i.e. having at least 18 years of contributions at the end of 1995); to these workers the previous defined-benefit system applies, as amended by the reforms. Accordingly, entitlement to the old-age pension is acquired at the age of 65 (60 for women) with a minimum requirement of 20 years of payments; moreover, entitlement to the seniority pension is preserved (at age 57 with 35 years of contributions).

Workers from cohort 5 will either have only a small share of their future pension computed on the old defined-benefit scheme (i.e. all entrants to the labour market before 1996) or they will have pension benefits computed exclusively on the new notional defined contribution scheme (i.e. all entrants to the labour market after 1995). These young workers will be the first to have benefits computed exclusively under the new rules, with no entitlement to the seniority pension.

As the new system will result in significantly lower pension benefits for retiring at similar conditions in terms of age and contributory years (if current seniority and retirement ages are maintained), those who entered the labour market during the 1990s (i.e. those born in the second half of the 1960s and the subsequent cohorts) will have to work longer to earn adequate pension rights. Moreover, they are asked to pay high social contributions in order to award generous pension benefits to older cohorts²³, and they have to earn enough to save a larger share of their current labour income to complement their future meagre pension benefits (from the statutory scheme) with supplementary pension provisions.

To sum up, the implications of the pension reforms on household income differ across cohorts. For old cohorts (in our analysis, cohort 2 and 3), the performance of household income is good, as they have maintained benefit defined pensions (earning related) and they enjoyed better earning age profile with respect to older cohorts (cohort 1). For younger cohorts (especially cohort 5 and future cohorts), the pension reforms have created significant drawbacks in terms of household income: in the current period, households are asked to save more (to secure decent pension benefits in old age); for the

²² The average age at which people enter working life has been increasing through time, due to education effects and trends in youth unemployment. Late entrance into the labour market for the younger cohorts makes the prospects of future pension benefits even worse.

²³ Under a PAYGO system, the contributions paid by the employed population are rewarded to the retired population during the same time period, with a reallocation of resources from the cohorts in work (the "young") to the cohorts that have already retired (the "old").

future, households pension income will be not only low (given the lower replacement rate) but also uncertain. Their contribution defined pensions will be based exclusively on their working life history. And for a non negligible number, the work history will be characterised by non-standard, unstable and low paid jobs²⁴. Moreover, as will be shown in the next section, young cohorts also have to face increasing costs of housing services.

4.3 The role of housing rental costs

In Italy, an important determinant of the evolution of household income is imputed rental income from owner-occupied housing. Indeed, the vast majority of households lives in owner-occupied housing, and only a low, and declining, share of households lives in rental housing²⁵. The high proportion of households owning their dwelling is the outcome of a long-term trend recorded by census data (see tab. A5 in the appendix): it was 59.2% in 1981, but 68% in 1981 and 71.4% in 2001. In the SHIW sample, in 2004 about 68% of all households owned the house they lived in, and another 10% could stay in the house without paying any rent (usufruct or free use)²⁶. In order to make the income of home-owners comparable with that of tenants, the Bank of Italy adds a measure of imputed rental income for housing services, based on homeowners' subjective evaluations of the rent that could be obtained in the case of letting the house. As figure 8 shows, this component of income increased dramatically, from about 350 euros per month in 1989 (2003 prices) to about 500 euros in 2004, with an increase of 36%. Even if we drop the latest year, for which the largest change has been reported, the increase in imputed rental income is still about 25%, far exceeding the growth of other income components. An even larger increase can be observed for paid rents: the median rises from about 190 euros per month in 1989 to almost 300 euros per month in 2004, with a percentage increase of 58%.

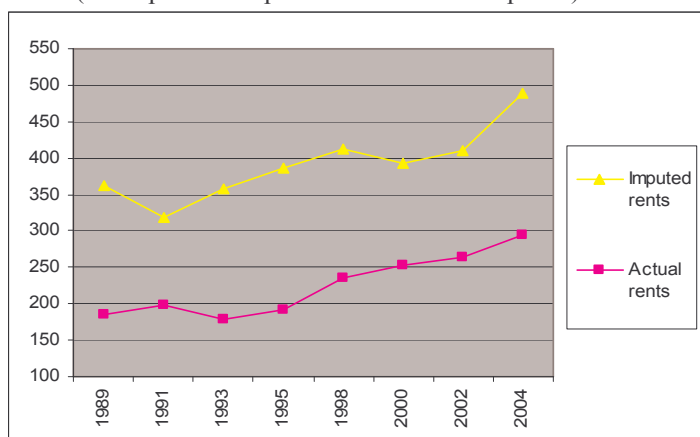
These exceptional increases in the rental costs of housing (imputed or actual rents) lead to significant differences in the evolution over time of household income gross or net of these costs. Indeed, as shown in figure 9 and table 12, in terms of net income (i.e. excluding both imputed and actual rents), there has been no increase in the median equivalent household income over the time period we are considering: the growth recorded after 1995 simply took the income back to its 1989 level. This outcome suggests the crucial role played by the housing situation for the welfare of households.

²⁴ Recent studies suggest that the probability of being caught in precarious and unstable jobs is on the increase. Barbieri and Sherer (2005) find that the proportion of individuals who at the age of 35 had a work history characterised by successive experiences in non-standard employment increased considerably for the cohorts born in 1963-67 relatively to older cohorts (born in 1958-62 and 1948-57). Brandolini et al. (2007, p. 57) find that the probability of moving from a temporary to a permanent job within twelve months drops by 5% between 1995 and 2000.

²⁵ In Italy home ownership is among the highest in the European Union. According to Eurostat EHCP, in 1998 the proportion of households owning their own house of residence was 71% in Italy, as compared with 69% in the UK, 59% in Sweden, 53% in France and 41% in Germany. The proportion was higher only in Spain (82%), followed by Greece and Ireland (74%) (Brandolini, Cannari, D'Alessio and Faiella 2004, p. 24).

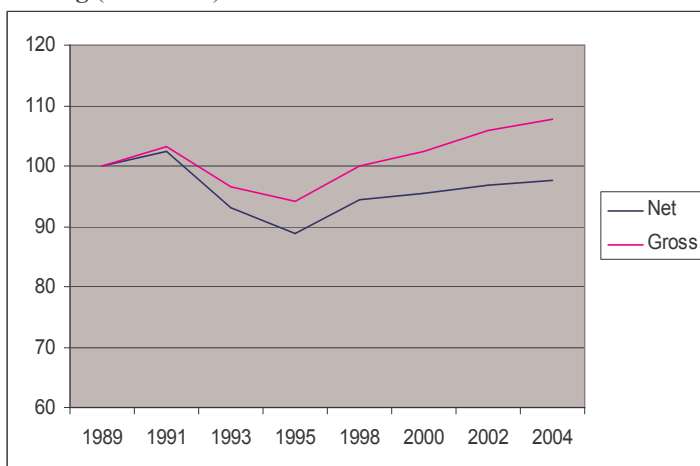
²⁶ In 1989, these percentages were 63% and 8.5% respectively.

Fig. 8: Median of actual and imputed rents
(euros per month per household at 2003 prices)



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Fig. 9: Index number of median household equivalent income gross and net of the rental costs of housing (1989=100)



Notes: The measure of "net" income is obtained by subtracting imputed and actual rents from the "gross" one.
Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. 12: Percentiles variation for equivalent household income net of the rental costs of housing (%)

	p10	p25	p50	p75	p90	Mean
1989-2004	-11.4	-4.0	0.5	0.1	2.3	3.6
1989-1995	-25.7	-13.9	-9.5*	-7.2	-8.9	-11.0*
1995-2004	19.3	11.4	11.0*	7.9	12.2	16.4*

Notes: * statistically significant differences at 5% (confidence intervals have been computed only for mean and median).

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Before analysing to what extent these costs differently affect young and old cohorts, the reasons for the dramatic increase in rental housing costs should be briefly explored. As a matter of fact, rents markedly increased in the period considered here, in parallel with the increase in housing prices. Data on rents are not easily available, but a number of recent papers document the exceptional rise in housing prices. Brandolini, Cannari,

D'Alessio and Faiella (2004, p. 24) report that the increase in housing prices between 1989 and 2000 exceeded by 40% that of consumer prices. According to recent estimates by Cannari et al. (2006, p. 14), over the period 1962-1992 housing prices increased by around two and half times more than consumer prices, recording an increase almost three times, in real terms, that recorded by households disposable income; after a brief reduction during the recession of 1992-93, housing prices have reverted to a new phase of steep growth since 2000. Nomisma (2005) documents that mean prices of new housing increased by 70.4% in the period 1998-2004 (by 46.1% in constant prices).

High market values of the housing stock due to house price rises, and expectations of further price increases, stimulated housing investments by households. This increase in housing demand was eased in the 1990s by the liberalisation of the mortgage market (Bernardi and Poggio, 2004), and the historically low interest rate experienced in the last decade. A lack of housing policy (providing social rented housing and/or subsidies) and changes in the housing market resulted in a further increase in the already large share of home ownership, as well as in further price increases²⁷.

Because movements in housing prices and rents are related, rents markedly increased as well, not only in large urban centres but also in suburban areas²⁸. The consequences of this phenomenon were twofold. On one side, the difference between housing prices and rents diminished (given the improvement in financial conditions for loans), favouring home ownership in turn (as the steady increase in loans show²⁹). On the other side, households not able to afford a mortgage (for example, for lack of a standard employment contract) face very high rents, and a reduction in the supply of houses to rent caused by the decision to purchase of an increasing number of households. In recent years, there has been an increase in the supply of unrented properties, and the demand for low rents has gone largely unmet (Nomisma, 2005), making it difficult for young households, with medium-low income, to find an affordable solution.

Changes in the housing market affect various cohorts in different ways. First of all the percentage of tenant households having to face the cost of rental housing is larger for younger cohorts in any given year (see tab. 13), which implies that in these cohorts a larger fraction of households have been affected by the increase in actual rents. Secondly, through time, the proportion of households living in rental housing has declined for all cohorts, but more noticeably for cohort 5. The percentage of tenant households almost halved between 1989 and 2004, suggesting a much faster transition towards ownership with respect to older cohorts. Finally, although the percentage of households with rented houses is lower for successive cohorts at the same age, the magnitude of rents is generally higher (see tab. 14).

²⁷ The upward trend in real property prices in recent years is also related to the massive portfolio reallocation of institutional investors since 2000 and housing quality upgrading.

²⁸ Unsurprisingly, households' perceptions of housing cost deteriorated in Italy over the period 1995-2001, while they were steadily improving in the other ECHP countries. Boeri and Brandolini (2004) attribute this marked deterioration in reported household ability to meet housing costs to the markedly increase in rents recorded in Italy since 1994.

²⁹ From SHIW data, the share of homeowners with a loan for buying or upgrading the house increased from 7.8% in 1989 to 13.3% in 2002. The average value of the loan also increased from 882 to 1462 per household euros per month (at 2003 prices).

Tab. 13: Households with rented house by cohort (%)

	cohort 1	cohort 2	cohort 3	cohort 4	cohort 5
1989	16	24	28	39	48
1991	17	20	25	32	33
1993	19	22	21	30	33
1995	17	18	21	26	29
1998	16	18	18	23	32
2000	16	13	16	23	29
2002	17	14	15	20	25
2004	13	14	16	21	25

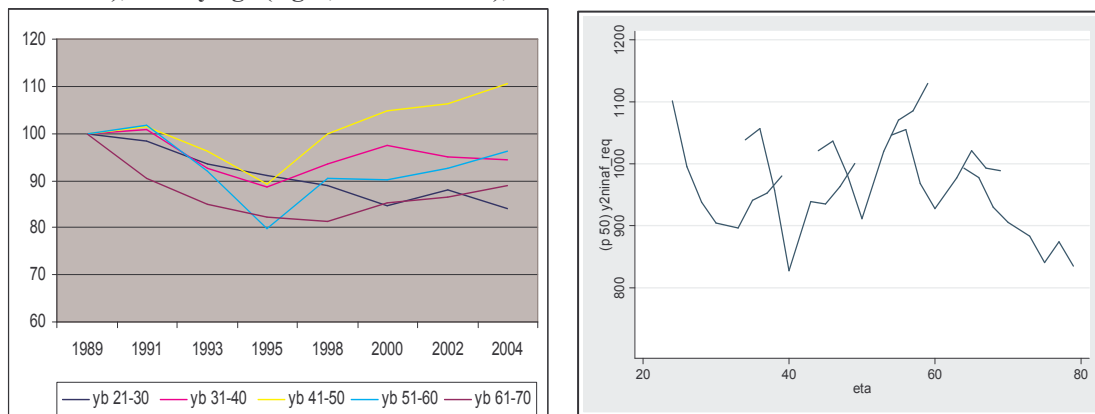
Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. 14: Mean of actual rents (euros per month per household at 2003 prices)

	cohort 1	cohort 2	cohort 3	cohort 4	cohort 5
1989	202.6	228.2	244.6	234.2	232.4
1991	209.5	223.1	241.8	243.3	261.4
1993	201.1	205.4	251.6	240.1	244.2
1995	209.9	211.7	239.3	240.5	262.4
1998	227.6	273.3	291.0	269.4	302.2
2000	253.7	237.0	278.9	314.8	315.4
2002	257.5	260.6	312.7	307.9	323.7
2004	259.5	238.2	334.5	336.8	370.8

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Fig. 10: Median monthly equivalent household income net of housing rental costs by year (left, 1989=100), and by age (right, euros at 2003), for various cohorts



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

The consequences of these phenomena for the evolution of net equivalent income for different cohorts are depicted in figure 10. The only cohort for which equivalent income increased during the 1990s is again cohort 3 (with heads born in the 1940s); for this cohort, median equivalent income in 2004 was about 10% higher than in 1989, whereas all other cohorts experienced a significant decline in net income, from 4-5% for cohort 2 and 4 to 11% and 16% for the youngest and the oldest one respectively³⁰. The age-income profile confirms that this evolution is reflected in positive cohort effects only for

³⁰ If we discard year 1989 for the youngest cohort, the change in net equivalent household income between 1991 and 2004 is insignificant.

the older cohorts, whereas the younger have gained over the previous cohorts only in the very last period of observation.

To sum up, the housing market has undergone significant changes that differently affect young and old cohorts. Housing prices and rents have markedly increased, while household average disposable income have stagnated. The changes occurred in the last fifteen years in the housing market, together with the liberalisation of the mortgage market, have resulted in a further increase in the already large share of home ownership, further limiting the supply of houses to rent. Increases in house prices have led to an increase in homeowner's wealth, but it has also given rise to higher costs of housing services, interest to be paid on loans and rents. And the higher cost of housing services results in a greater (negative) impact on the younger households, those in search of an affordable house tenancy.

5. Decomposing changes in household equivalent income over time and across cohorts

In this section we identify the main reasons why the evolution of household income over the last fifteen years has been different across cohorts, and why different cohorts at the same age can rely on different levels of real income. To this end, the first step is to run a regression of household equivalent income on a set of demographic and economic variables. Usually, when one considers a homogeneous variable such as e.g. male wages, and follows cohorts of individuals through time, some identifying assumptions are needed to overcome the problem of perfect collinearity between age, time and cohort dummies. Here we need to consider first that our dependent variable is not homogenous: we have cohorts for which household income is derived mainly from earnings, and cohorts for which household income is derived mainly from pensions; moreover, the age at which the composition of household income changes may be different for different households, and for different cohorts. Finally, it is reasonable to expect that cohort effects (and to some extent time effects) will be different according to the "occupation"³¹ and the educational levels of the spouses.

Because of the composition effects that characterize the dependent variable, we estimated a unique age profile for all cohorts, which should capture the average effect over different occupations, labour market participation within the household, etc., and attribute shifts in this profile to education-specific and occupation-specific cohort effects, and other changes to occupation-specific time effects. This last assumption is supported by the evidence that gains and losses of economic growth over the period considered have been distributed quite differently to the different occupational categories.

Since we could rely on a very large sample, we started by introducing a full set of year and cohort dummies, each interacted with occupational dummies, and then tested the restriction that a subset of them are actually zero. Table 15 reports the final results³² of

³¹ In what follows we use the term "occupation" to indicate both the occupational status, i.e. working vs. retired, and the occupational category, i.e. blue collar vs. self employed, etc.

³² Initial results are reported in table A7 in the appendix; the value of the F test for the joint restrictions that the interactions between occupation and year and cohort dummies not reported in table 15 can be set to zero, and that some other coefficients are equal, is $F(50, 39611) = 1.20$, which corresponds to a P value of 0.15 (see the appendix for details).

the OLS regression (with robust standard errors) of the logarithm of household equivalent income³³ on a polynomial in age, the interaction of occupation with cohort and year dummies, other covariates such as regional dummies, number of household members and number of children, number of labour and pensions income recipients (other than the head and the spouse), a dummy for the presence of a working spouse and for renting the house, and finally the interaction between educational dummies and cohort dummies for both the head and the spouse (for a more detailed description of the variables see table A6 in the appendix).

Tab. 15: OLS regression results with robust standard errors
(dependent variable: logarithm of household equivalent income)

	Coeff	t		Coeff	t
Constant	6.805	234	heduc2_coh1	0.339	22.17
age_coh	0.003	7.69	heduc2_coh2	0.288	21.62
1991_bc	-0.033	-3.2	heduc2_coh3	0.162	15.05
1993_bc	-0.083	-6.09	heduc2_coh4	0.105	11.59
1995-2004_bc	-0.113	-10.82	heduc2_coh5	0.102	9
1991_wc	-0.042	-3.83	heduc3_coh1	0.634	26.1
1995-2000_wc	-0.084	-9.39	heduc3_coh2	0.533	21.91
2002-04_wc	-0.126	-11.03	heduc3_coh3	0.368	20.63
1993_self	-0.158	-7.61	heduc3_coh4	0.331	19.48
1995_self	-0.247	-11.62	heduc3_coh5	0.230	8.93
1998-2000_self	-0.101	-6.19	sped2_coh12	0.200	15.72
2002_self	-0.049	-2.31	sped2_coh3	0.151	13.63
1991_man	-0.042	-2.61	sped2_coh45	0.086	10.66
1993_man	0.111	5.18	sped3_coh12	0.310	12.4
1993-2002_un	-0.412	-5.92	sped3_coh3	0.248	14.15
ret_coh2	0.089	10.82	sped3_coh45	0.169	12.04
ret_coh3	0.163	13.18	spw_coh12	0.250	17.68
bc_coh12	0.214	17.33	spw_coh3	0.286	32.03
bc_coh345	0.261	16.76	spw_coh45	0.367	51.78
wc_coh2	0.292	17.95	Noth_earners	0.292	63.21
wc_coh3	0.352	22.72	Noth_ret	0.196	41.74
wc_coh45	0.399	24.51	Ncomp	-0.174	-52.94
man_coh2	0.383	16.74	Nchild	0.016	4.3
man_coh345	0.483	32.14	North	0.289	58.8
self-emp	0.404	29.31	Centre	0.193	34.35
unemp_coh2	-0.299	-3.7	Rent	-0.294	-41.94
unemp_coh3	-0.477	-6.52	Rent_1989-1991	0.100	10.15
unemp_coh45	-0.799	-11.71	Rent 2004	-0.046	-2.79
Number of obs	39717				
F(55, 39661)	849.17				
Prob > F	0				
R-squared	0.592				
Root MSE	0.399				

³³ We used the definition of income which includes imputed rents, and used a dummy variable (interacted with year dummies) to capture the effect of not being a homeowner.

We also estimated a more parsimonious specification by introducing a GDP index – again interacted with occupational variables – instead of the full set of year dummies³⁴. Carrying out a J-test between the two models, if we added the prediction of the “GDP model” to the “year-dummies model” we obtained a t-value of 0.87, whereas in the opposite case, the t-value became 12.85³⁵. Their ability to capture the main features of our data are illustrated in fig. A4 and fig. A5 in the appendix. Visual inspection confirmed a somewhat better performance of the “year-dummies model”. Therefore, we use the results of this model in our subsequent analysis.

In table 15, the base household is from cohort 1 with a low-educated retired head. In order to understand the results, it is necessary to bear in mind that, if the coefficient on some occupation dummies is the same for various cohorts or for various years, this means that the corresponding restrictions have been tested (see appendix). As one can observe, the interaction between year and occupational dummies displays some interesting patterns. The recession of the early 1990s mainly affected blue-collar and self-employed. Both blue and white collars experienced a constant loss in the second half of the 1990s and the early years of the new century (for the latter, the loss has increased over time). Self-employed, instead, even though they experienced very large losses in the early 1990s, recovered quite quickly over the subsequent period, and in 2004 they were back to the initial levels. Managers faced a small loss in 1991 and a significant gain in 1993, but then their situation remained similar to that of the late 1980s. No time effect can be identified for retired persons.

We allowed for educational and occupational specific cohort effects. As our previous analysis suggested, cohort effects for households with retired heads are positive (9% and 16% for cohort 2 and 3 respectively). The only occupational category for which we do not observe cohort effects is self-employed; their income is on average 40% higher than the reference household. For blue collars, white collars and managers we have positive cohort effects, whereas for unemployed workers they are negative (i.e. the loss associated with unemployment is increasing with the year of birth). It is worth noting that the gains of the youngest cohort over cohorts 3 and 4 are negligible.

With respect to education, it is interesting to note that “returns” to education are positive but they decrease for younger cohorts: old cohorts have a 30% higher income if the head has a secondary-school diploma, and 55-60% for a university degree; these percentages reduce to 10% and 23-33% for cohorts 4 and 5. A similar decreasing pattern is associated with the educational level of the spouse, whereas the gain in equivalent income if she participates in the labour market is higher for younger cohorts.

Equivalent income increases if there are other individuals with labour or pension income (even if the size of the gain is different in the two cases), and decreases with household size (slightly less so if household components are young, because of the different coefficient assigned to them in the equivalence scale). Finally, households who live in the north or in the centre of the country may enjoy higher incomes, whereas the income of those who rent their houses is 30% lower than that of those who own them (note that at the beginning of the 1990s the loss was only 20%, and that it increased to 34% in 2004).

³⁴ We also allowed the coefficients on the GDP index to be different before and after 1993, because the drop in household income observed in SHIW data in 1993 and 1995 is not well captured by the index.

³⁵ Note that the coefficients on other variables are only slightly different in the two models.

The results of our econometric model allow us to perform two decomposition exercises: since the mean of equivalent income for each cohort can be expressed as a weighted sum of the mean of the regressors, we can attribute the change in the mean of equivalent income both over time and across cohorts to changes of specific regressors and/or coefficients. Let a cohort mean of the predicted equivalent income at time t be

$$\bar{y}_{c,t} = \hat{\alpha} + \sum_{k=1}^n \hat{\beta}_{k,c} \bar{x}_{k,c,t}$$

where n is the number of regressors, $\hat{\alpha}, \hat{\beta}$ are parameter estimates, $\bar{x}_{k,c,t}$ is the (weighted) mean of variable k for cohort c at time t.

The first simple exercise is to decompose the change in the mean of equivalent income of each cohort between t and t+k, as:

$$\bar{y}_{c,t+k} - \bar{y}_{c,t} = \sum_{k=1}^n \hat{\beta}_{k,c} (\bar{x}_{k,c,t+k} - \bar{x}_{k,c,t})$$

The second exercise is to decompose the change in the mean of equivalent income of two different cohorts at the same age. Let c1 and c2 denote two different cohorts; let c1 be at a certain age at time t, and let c2 be at the same age at time t+ γ . Then we have:

$$\bar{y}_{c2,t+\gamma} - \bar{y}_{c1,t} = \sum_{k=1}^n \hat{\beta}_{k,c2} \bar{x}_{k,c2,t+\gamma} - \sum_{k=1}^n \hat{\beta}_{k,c1} \bar{x}_{k,c1,t}$$

Tables 16 and 17 show the actual and predicted changes in mean equivalent household income for each cohort over time and for different cohorts at the same age. Predictions are less accurate for the changes over time in each cohort than for the differences between cohorts at the same age. In particular, the reduction in mean income for cohorts 1 and 5 is over-predicted and the increase for cohort 2 under-predicted. Differences across cohorts at the same age are well captured, especially when averages over different years are considered.

Tab. 16: Differences in cohort means over time
(period considered: average over 2000-2004 minus average over 1989-1993*)

	cohort 1	cohort 2	cohort 3	cohort 4	cohort 5
Actual	-0.4	5.5	10.4	0.8	-0.1
Predicted	-0.3	1.9	8.9	2.0	-5.4

Notes: * for cohort 5 only 1991 and 1993.

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. 17: Differences in cohort means by age

	cohort 2 - cohort 1				cohort 3 - cohort 2			
	64*	66**	68***	65-66****	54*	56**	58***	55-56****
Actual	1.2	6.0	9.0	5.2	1.7	4.4	15.0	7.0
Predicted	0.7	4.1	10.4	4.8	-1.5	-0.9	11.3	3.0
	cohort 4 - cohort 3				cohort 5 - cohort 4			
	44*	45**	46***	45-46****	34*	35**	36***	35-36****
Actual	-10.9	-6.7	5.4	-4.1	-10.3	-1.7	6.9	-2.1
Predicted	-7.6	-5.2	4.1	-3.1	-9.1	-6.6	3.6	-3.4

Notes: * Average cohort i+1 over 1998-2000 minus cohort i at 1989

** Average cohort i+1 over 2000-2002 minus cohort i at 1991

*** Average cohort i+1 over 2002-2004 minus cohort i at 1993.

**** Average cohort i+1 over 1998-2004 minus average cohort i over 1989-1993

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Table 18 reports the results of the decomposition of the change in each cohort's mean over time. In order to understand the results, one should bear in mind that even if some characteristics do not change over time at the individual/household level (e.g. education), we can still observe a positive or negative effect associated with these variables because the sample composition may change. Secondly, instead of presenting the effect of each variable separately, we have grouped some of them together and report only the "aggregate" effect. For example, "time" represents the sum of all the interactions between year dummies and occupational variables, "occupation" the effect of all the interactions between cohort and occupational dummies, "number of income recipients" includes the number of individuals with labour and pension income, etc.

Tab. 18: Decomposition of income differences in cohort means over time

	cohort 1	cohort 2	cohort 3	cohort 4	cohort 5
Age	3.1	3.1	3.1	3.1	3.0
Time	0.2	1.0	-2.7	-5.3	-3.7
Occupation	-5.0	-13.6	-7.6	-0.9	-0.4
Head education	0.2	-0.1	-0.1	0.6	1.8
Spouse education	-0.1	-0.4	-0.1	0.2	1.6
Spouse work	-2.3	-5.4	-2.3	1.3	0.0
N. other income recipients	-3.8	0.0	10.9	5.1	-0.1
Components	8.7	16.7	7.1	-4.1	-7.1
Rented House	-0.4	0.7	0.8	1.1	0.8
Region	-0.9	-0.3	-0.3	0.9	-1.2
Total	-0.3	1.9	8.9	2.0	-5.4
Actual	-0.4	5.5	10.4	0.8	-0.1

Notes: Averages over 2000-2004 minus averages over 1989-1993 (for cohort 5 only 91-93). For the definition of the various effects, see the text.

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Because of the restriction we have imposed, and because the coefficient on age squared turned out to be insignificant, the estimated effect of age is positive and equal for all cohorts. The way in which economic growth affected different occupational categories, instead, leads to an average loss for cohorts 3, 4 and 5, and to negligible time effects for cohorts 1 and 2. Note that for the former, the size of the loss associated with time effects almost completely outweighs the positive age effect. The transition to retirement explains the negative effect of "occupation" for the older cohorts, especially for cohort 2, for which a large share of individuals underwent this transition during the last fifteen years. Similar effects can be observed for the labour market participation of the spouse. Education of both spouses has negligible effects for older cohorts, but positive and quite sizeable effects for the youngest cohort, because more educated individuals form independent households later in life and therefore enter the observed group in later years.

It is interesting to examine the size and sign of the effects associated with the household size and the number of other income recipients. For the older cohorts, household size decreases because children leave the house as they age, with strong and positive effects on household equivalent income, whereas for younger cohorts the effect is negative because children are born and household size increases over the period. This negative effect is compensated by an increase in the number of other income recipients only for cohort 4. This is due to the fact that for this cohort there is a significant increase in the

proportion of households with three earners. The negative effect of other income recipients for cohort 1 and 2 is mainly due to the lower coefficient on the number of individuals with pension income compared with the one on those with labour income. The peculiarity of cohort 3 emerges quite clearly from the effects of these two variables: household size decreases with positive effects on household income, but at the same time the average number of earners and the number of pension income recipients increases with similar positive effects. Indeed, the average number of sons or daughters decreased from 1.75 to 1.28, but at the same time the average number of sons or daughters who work increased from 0.21 to 0.49. The share of households with other earners (other than the head and the spouse) increased from 18% to 44%; and the share of households with other retired individuals (other than the head) increased from 11% to 16%).

Finally, the decrease in the proportion of households with rented accommodation has small but positive effects for all cohorts except the oldest one. Regional composition of the sample changed slightly over the period considered with small negative effects for the oldest and the youngest, and positive effects for cohort 4.

We now look at the differences across cohorts at the same age. Table 19 reports a decomposition of the differences between the various cohorts averaged over the years for which data overlap (in the appendix we report also the decomposition for single years of age). The variables mainly responsible for the differences across cohorts are occupation-specific cohort and time effects, household size, and the number of income recipients, especially spouse participation in the labour market.

Tab. 19: Decomposition of income differences across cohorts at the same age

	coh2 - coh1 (about 65-66)	coh3 - coh2 (about 55-56)	coh4 - coh3 (about 45-46)	coh5 - coh4 (about 35-36)
Age	-0.2	-0.2	-0.2	0.4
Occupation	5.5	1.6	-1.5	-1.7
Time	-2.0	-4.1	-5.8	-6.0
Components	1.2	2.2	3.1	2.1
Spouse works	0.2	3.2	6.4	1.6
N. other income recipients	-0.3	-1.9	-2.9	-0.7
Head educ.	0.6	0.1	-0.4	-1.3
Spouse educ.	0.8	1.9	-0.6	0.8
Rented House	-0.6	0.2	-0.8	-0.3
Region	-0.5	0.1	-0.5	1.7
Tot.	4.8	3.0	-3.2	-3.4
Actual	5.2	7.0	-4.1	-0.4

Notes: Average over 1998 to 2004 for cohort (i+1) minus average over 1989 to 1993 for cohort (i). In the last column we considered the average of cohort 5 over 2000 to 2004 minus the average for cohort 4 over 1991 to 1993.

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Occupation-specific cohort effects are positive for older cohorts and negative for younger ones. In order to understand the reason for this, we report in table 20 the distribution of households of different cohorts at the same age according to the occupation of the head. On looking at the estimated coefficients and at table 20, it is evident that the main reason why this effect is positive for cohort 2 vs. 1 is the gain in terms of pension levels (which in the regression corresponds to a percentage increase in

household equivalent income of about 9%), partly reduced by a larger proportion of households with unemployed head and a lower proportion with self-employed head. The positive occupation effect for cohort 3 vs. 2 is again due to a higher level of pensions, reduced by various composition effects. Cohort 3 is characterized by a larger share of households with retired and unemployed head (i.e. with a lower “return” compared to other occupational categories), and a lower share of self-employed. Note that these changes in composition are not big enough completely to outweigh the positive effect of higher pensions. Since the coefficients on the interaction between cohort and occupational dummies are similar for cohort 3, 4 and 5, the negative sign of “occupation” for cohort 4 vs. 3 and 5 vs. 4 is mainly due to a difference in sample composition. In comparison with cohort 3, cohort 4 has a lower proportion of households whose head is a manager, and a higher share of self-employed and unemployed. The negative effect of these differences is partly overcome by the larger fraction of white-collars and the higher returns associated with them. Cohort 5, instead, is formed by a larger proportion of blue-collars and self-employed heads – compared to cohort 4 at the same age – and a lower share of white-collars and managers. Also in this case there is a larger fraction of households with unemployed heads. These composition effects also explain why occupation-specific time effects are negative in all cases, and larger for younger cohorts.

Tab. 20: Household distribution by the occupational status of the head for different cohorts at the same age (%)

	35-36		45-46		55-56		65-66	
	cohort 5*	cohort 4**	cohort 4*	cohort 3**	cohort 3*	cohort 2**	cohort 2*	cohort 1**
Blue collar	37.3	32.7	30.3	31.8	16.9	22.0	3.3	2.4
White collar	22.0	29.1	26.6	25.7	17.4	12.6	1.9	2.4
Manager	5.9	8.6	8.6	11.8	6.6	7.9	1.2	1.5
Self-employed	29.6	26.6	28.6	26.1	23.2	27.7	8.4	12.3
Unemployed	3.6	2.3	3.7	1.8	4.7	1.9	2.9	0.3
Retired	0.3	0.4	1.8	2.4	31.0	27.6	81.9	80.6

Notes: * Average of the proportions for 1998, 2000, 2002 and 2004.

** Average of the proportions for 1989, 1991, 1993.

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Differences across cohorts are also affected by household size and the number of income recipients. Since the former has diminished steadily over time, the equivalent income of subsequent cohorts at the same age would have increased by about 2-3%. This positive effect is coupled with the positive effect of the increase in female participation – especially for cohort 3 vs. 2 and 4 vs. 3 – but with the negative effect of a reduction in the number of other income recipients. Both the share of households with at least 1 labour income recipient other than the head or the spouse, and with at least 1 pension income recipient other than the head are lower in cohort 3 compared with cohort 2 (42.6% vs. 44%, and 14% vs. 17% respectively), as well as in cohort 4 compared with cohort 3 (15% vs. 18% and 5% vs. 11%). It is worth noting that when the head was aged about 45-46, 11% of households in cohort 3 had at least one retired individual other than the head, whereas this percentage decreased to 5% for cohort 4, probably because of the changes in the possibility of early retirement.

Other variables have minor effects; in particular, the educational level of the head has negative effects for younger cohorts (because of “diminishing returns” prevailing over

larger shares of more educated heads), while educational level of the spouse has positive effects for older cohorts, especially cohort 3 vs. 2, and for the youngest. Renting the home has generally negative effects for younger cohorts, due to the different coefficients estimated for the initial years compared to the subsequent ones, implying a larger loss from 1993 onwards. Had the proportion of tenants remained the same, the size of the effect would have been much larger; the reduction in the proportion of tenants reduced this effect for all cohorts, and for cohort 3 vs.2 it was big enough to change its sign. Finally, there are some differences in the regional sample composition, particularly for cohort 5 vs. 4, with a larger share of households living in the north or in the centre for the youngest cohort.

To sum up, cohort 2 has gained over cohort 1 because of higher pension returns, more educated heads and lower household size. These gains have been partly offset by negative time-effects and a reduction in the number of income recipients. Cohort 3 has gained over cohort 2 because of higher pension returns, smaller household size, higher female education and participation. Again, these gains have been partly offset by negative time-effects and a reduction in the number of income recipients. Cohort 4 has lost compared to cohort 3 because of the negative effects of time, head and spouse education, and the number of income recipients. The positive effects of smaller household size and female participation were not enough to compensate for the previous ones. Finally, cohort 5 has also lost compared with cohort 4 for a similar reason; in this case, the gain from female participation is much lower, but is compensated by a positive effect of spouse education and regional composition.

6. Conclusions

The analysis of the evolution of household equivalent income from 1989 to 2004 for “cohorts of households” defined by the age of the household’s head, reveals a deterioration of the economic conditions and prospects of “young households” in comparison with older cohorts. We used both a descriptive analysis, and an econometric model to shed some lights on the phenomena that lie behind differences in income dynamics over time, as well as in income levels for different cohorts at the same age. We consider the effects of household size, labour market conditions (in terms of both earnings profiles and participation), changes in social security rights, and housing costs.

The available evidence on individual wages supports the view that younger cohorts (the new entrants in the labour market in the period here considered) experienced a sizeable wage loss with respect to cohorts entered in previous decades. The changes in institutional arrangements (i.e. the two-tier labour market reforms and the changes in the wage setting mechanisms), the moderate growth of economic activity and the productivity slowdown resulted in a disappointing performance of labour incomes in the last fifteen years. The stagnation of real wages hit younger cohorts more severely than older ones as they experienced not only a significant drop in entry wages but also a slower wage progression. This meant increasing difficulties for these cohorts in forming a family, and in having and raising children. Indeed, household size is lower for successive cohorts, but this effect – together with the increase in the number of earners within the family – is not big enough to compensate for the loss in real wages. As a consequence, household equivalent labour income is about 10% lower for younger cohorts.

During the same time, individual pensions showed a completely different pattern. Retired individuals from younger cohorts can rely on pensions that are much higher than those of the previous cohorts. However, these positive cohort effects on pension benefits are not likely to continue in the future. The reforms of the pension system occurred in the 1990s (with their long transitional phase) affected individuals from different cohorts very differently. While workers born in the 1940s and in the 1950s can enjoy the old defined-benefit system, those born after the mid 1960s will have pension benefits computed exclusively on the new notional defined contribution scheme, with no entitlement to seniority pensions. As a consequence, for young households pension income will be not only low (given the lower replacement rate) but also uncertain. The coexistence, at present, of different pension regimes leads a striking intergenerational inequity: the younger cohorts, those suffering from lower labour income, have to save an increasing share of their current income in order to secure decent pension benefits in their old age, and are also asked to pay high social contributions in order to award generous pension benefits to older cohorts.

The housing market has undergone significant changes that differently affect young and old cohorts. Housing prices and rents have markedly increased, while household average disposable income have stagnated. The changes occurred in the last fifteen years in the housing market, together with the liberalisation of the mortgage market, have resulted in a further increase in the already large share of home ownership, further limiting the supply of houses to rent. Increases in house prices have led to an increase in homeowner's wealth, but it has also given rise to higher costs of housing services, interest to be paid on loans, and rents. And the higher cost of housing services results in a greater (negative) impact on the younger households, those in search of an affordable house tenancy.

Using a regression analysis, we identified the effect of each element mentioned above on household income. In line with previous studies, our results show that, over the last fifteen years, households headed by blue and white collars experienced a worsening of their economic conditions, whereas the opposite happened to households headed by self-employed, managers, and retired individuals. More interesting for our purposes are the estimates of the cohort effects. These are positive and significant for households with retired heads, whereas they depend on the occupational category if the head is working. The gains of the youngest cohort over the previous ones are generally negligible: cohort effects are always null for cohort 5 vs. cohort 4, and are null also for cohort 4 and 5 vs. cohort 3 in the case of blue collars and managers. Furthermore, "returns to education" for both the head and the spouse decrease for younger cohorts, i.e. education-specific cohort effects are negative. It is interesting to note that, instead, the gain associated with the spouse's participation is higher for younger cohorts.

By exploiting the regression results we performed two decomposition exercises to explain the evolution of each cohort's mean income over time and the differences between cohorts at the same age. The extraordinary performance of cohort 3 is mainly due to a reduction in the number of household members coupled with an increase in the number of income recipients. Since the transition to retirement of both the head and the spouse occurred only for a small proportion of households, its negative effect has not been so large as for cohort 2 (for which it overcome completely the huge positive effect of the reduction in household size). The poor performance of the two youngest cohorts over the period considered is explained mainly by the increase in household size as new

children are born, and by the negative effect of economic growth on white and blue collars. Households with head born in the 1950s have done slightly better because these effects have been partly offset by an increase in the number of income recipients.

With respect to differences across cohorts at the same age, households whose head was born in the 1930s and in the 1940s gained over the preceding cohorts because of higher educational levels, female participation, smaller household size, and higher pension benefits. These gains were partly offset by negative time effects, and a reduction in the number of income recipients. Households whose head was born in the 1950s and 1960s lost compared to the preceding cohorts because of the negative time effect, a reduction in the “returns” to education, a larger share of heads in occupations with lower returns, and a reduction in the number of earners other than the head and the spouse (probably because children enter the labour market later in life). The positive effect of smaller household size and female participation, especially for households with heads born in the 1950s were not enough to compensate for the loss.

The analysis raised a number of issues: it highlighted the intergenerational inequality behind the evolution of the pension system in the last 50 years; it described the economic difficulties that young generations are facing, and that result from the joint occurrence of various events, like the institutional changes of the labour market, the poor economic performance of the economy and its adverse effects on white and blue collars, the new rules introduced for the pension system, and an exceptional increase in house prices and rents. The consequences of these events partly emerged from the analysis and partly represent interesting questions for future research. We refer in particular to demographic and welfare consequences. The difficulties in the labour market favour the tendency of forming a family later in life and with less children, who in turn will tend to remain in the household and start working even later than their parents. Returns to education are shrinking; the low levels of individual wages, the higher costs of housing, and the need to save a larger share of income to ensure decent pension benefits for the future imply that more earners are needed within the household to provide a sufficient level of income. The consequences of this on marriages and fertility decisions, on the resources available for children education and for public spending, as well as on the welfare costs associated with less time for both leisure and caring remain to be explored.

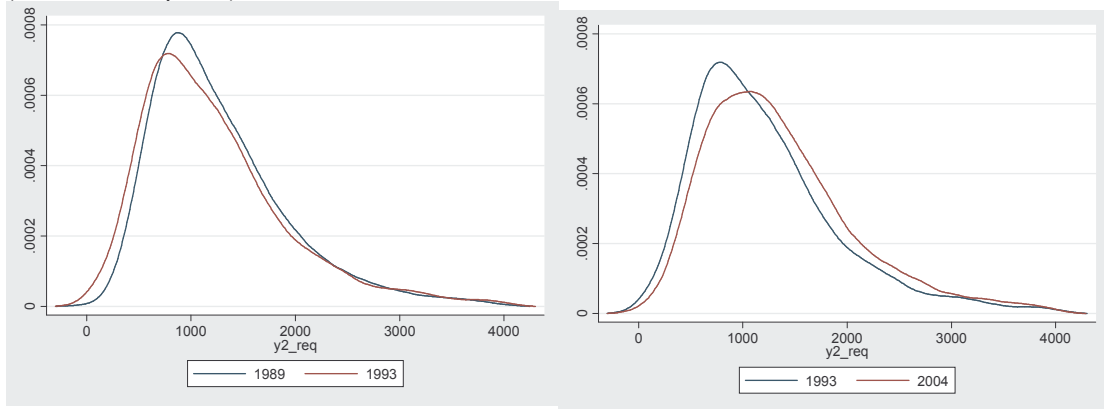
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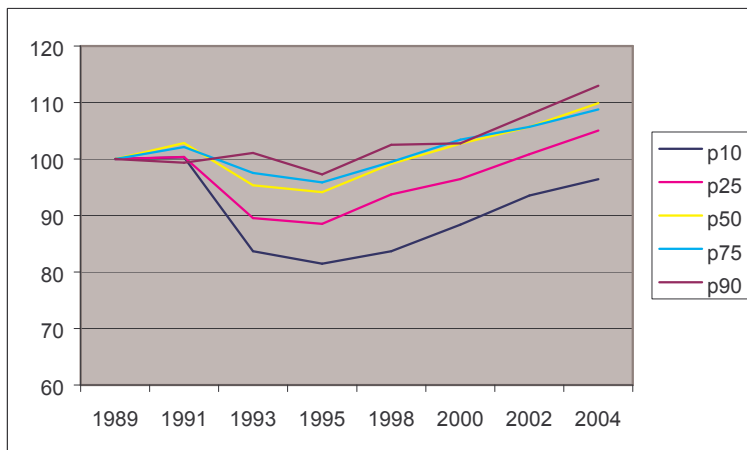
APPENDIX

Fig. A1: Non-parametric density functions of real monthly equivalent income in selected years (euros at 2003 prices)



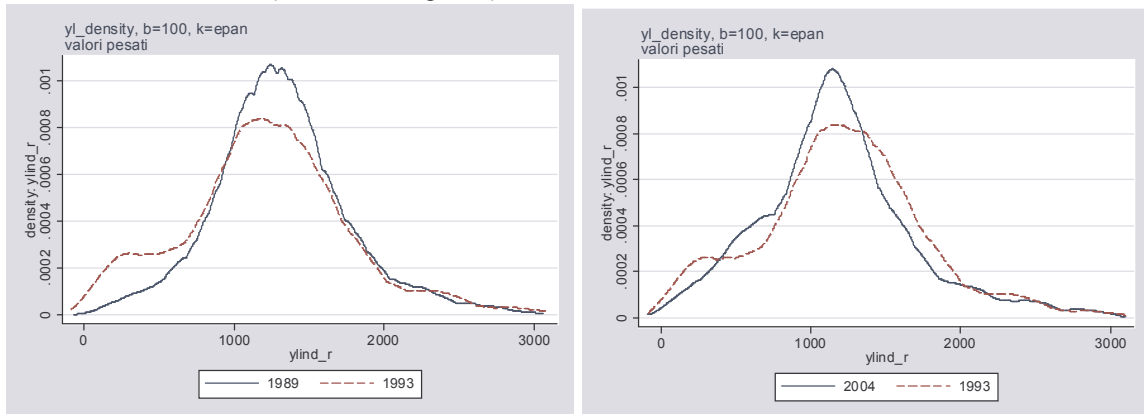
Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Fig.A2: Evolution of various percentiles of the distribution of real monthly equivalent income (1989=100)



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Fig. A3: Non-parametric density functions of individual labour income for male dependent workers in 1989, 1993 and 2004 (euros at 2003 prices)



Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Table A1 - The five cohorts

Cohorts	Entry into the labour market (14-29 years old)	Prime age (30-49 yrs) and old age (50+)	Labour market regulation
<p>Cohort 1 (1921-1930) representative cohort: 1926 Cohort size (MF, at the age of 56): 690,600</p>	<p>- In the 1940s and early 50s the labour market was characterised by underemployment, mass unemployment and large internal migration</p> <p>- Entry into the labour market occurred at a very early age (up until 1936, working life started at the age of 10)</p> <p>- Fuà (1976, p. 15) estimated that in 1936 the specific activity rate was almost 30% for men aged 10-14, and 87% for men aged 15-24</p>	<p>1955-74: - very high economic growth - high demographic growth - low (and decreasing) female participation</p> <p>Large numbers experienced employment in the underground economy (especially people employed in agriculture and construction)</p> <p><u>Employment (ERm):</u> cohort 1921 at 56 (in 1977): 80.6% cohort 1926 at 56 (in 1982): 76.6%</p>	<p>Until the mid-1960s, the innovations introduced aimed at three major goals:</p> <p>(i) granting protection to the marginal and weak groups of the labour force (L. 25/1955 on apprenticeship, L. 860/1950 granting specific protection to working mothers; L. 7/1963 forbidding the lay-off of female employees at marriage);</p> <p>(ii) ensuring a minimum standard of protection for all employees (L. 264/1949 on the regulation of public employment services; L. 741/1959 on the possibility to apply to all employees the conditions established in national collective agreements);</p> <p>(iii) repressing illegal and fraudulent forms of employment (including the possibility of mediators in the recruitment of waged-labour, L. 1369/1960).</p> <p>Between 1957 and 1968: a very generous pension system was constructed as a public unfunded PAYG (pay-as-you-go) system, the system applied (with some differences in generosity) to private and public employees, as well as the self-employed</p>
<p>Cohort 2 (1931-1940) representative cohort: 1936 Cohort size (MF, at the age of 46): 725,260</p>	<p>- In the 1950s and early 60s labour market conditions improved, internal migration continued and unemployment fell</p> <p>- Education: low levels</p> <p>- Entry into the labour market occurred at an early age (it was common to start working life at the age of 14)</p> <p><u>Unemployment:</u> Av. U rate (1961-71): 4,7%</p>	<p>1965-84: - high economic growth interrupted by the oil shocks of the 1970s - unemployment starts to increase - low and declining female participation (up until the early 1970s)</p> <p><u>Employment (ERm):</u> cohort 1931 at 56 (in 1987): 72.3% cohort 1936 at 56 (in 1992): 71.3%</p>	<p>The decade 1965-75 was characterised by the great expansion of the degree of protection granted by law (<i>garantismo normativo</i>).</p> <p>1969: pension benefits for private sector employees started to be computed on the basis of earnings (final salaries).</p> <p>1970: approval of the Workers' Charter (<i>Statuto dei Lavoratori</i>, L. 30/1970), a sort of workers' bill of rights establishing principles for the protection of workers and union activists in the workplace, as well as the regulation of both industrial disputes and union organisation. Among other things, it regulated individual and collective dismissals.</p>
<p>Cohort 3 (1941-1950) representative cohort: 1946 Cohort size (MF, at the age of 36): 653,460</p>	<p>- In the 1960s and early 1970s the economy kept growing</p> <p>- The overall increase in labour demand was greater than labour supply</p> <p>- The majority entered active life by the age of 19. In 1964 the specific activity rate was 54% for men aged 14-19, and 75% for men aged 20-24 (Fuà 1976, p. 17).</p> <p><u>Unemployment:</u> Av. U rate (1971-81): 6,1%</p>	<p>1975-94: - slowdown in economic growth - unemployment on the increase - increasing female participation - falling birth rate (since the mid-70s)</p> <p><u>Employment (ERm):</u> cohort 1941 at 41 (in 1982): 97.0% cohort 1946 at 41 (in 1987): 95.7% cohort 1941 at 56 (in 1997): 57.1% cohort 1946 at 56 (in 2002): 59.4%</p>	<p>In 1975, a year of severe recession and rising inflation, two important interconfederal agreements reinforced the degree of protection granted by law. These two agreements ensured some protection against the two new major threats: inflation and collective dismissals (and/or short-time redundancy).</p> <p>(i) The first agreement modified the indexing system in use (<i>scala mobile</i>) establishing the full compensation in wages and salaries for increases in the cost of living (established as a flat-sum, equal for all employees).</p> <p>(ii) The second agreement (later incorporated in L. 164/1975) was concerned with the income maintenance for workers employed in firms in crisis, with consequent problems of overmanning. In such situations, the CIG (<i>Cassa Integrazione Guadagni</i>), a national fund by and large financed by the State, may intervene to pay workers made temporarily redundant.</p>

<p>Cohort 4 (1951-1960) representative cohort: 1956 <u>Cohort size</u> (MF, at the age of 26): 777,477</p>	<p>In 1962 lower secondary education was made compulsory (affecting cohorts born after 1952). <u>Educational levels (M) in 1970/71:</u> 34.6% students obtained the upper secondary diploma (at 19 yrs) 14.8% students enrolled at universities (at 19-25 yrs) <u>Unemployment:</u> Av. U rate (1981-91): 8,6% Youth U rate around 1977: 18% <u>Employment (ERm):</u> cohort 1951 at 21 (1972): na cohort 1956 at 21 (1977): 50.5%</p>	<p>1985-2004: - long expansionary cycle (1983-90) followed by a very severe recession (1991-94) with over one million job losses - moderate growth of real wage - introduction of greater flexibility in the use of labour - increasing female participation - low (and still falling) birth rate <u>Employment (ERm):</u> cohort 1951 at 31 (in 1982): 96.0% cohort 1956 at 31 (in 1987): 91.9% cohort 1951 at 41 (in 1992): 94.9% cohort 1956 at 41 (in 1997): 91.4%</p>	<p>1984: in order to ease the entry of young workers (15-29 yrs) into the labour market, CFL contract was introduced (D.L. 726/1984). Advantages for employers of CFL (with respect to open-ended contract): fixed-term, up to a maximum of 24v months; very generous fiscal benefits; lower entry wage; possibility to hire the worker directly, without going through the ranking arranged by the “Ufficio di Collocamento”. 1991: direct hiring was extended to all firms (L. 223/1991). 1991: collective dismissals were made easier (L. 223/1991). 1993: income policy agreement (tripartite agreement): (i) abolition of the wage indexing system (<i>scala mobile</i>) in use since 1956; (ii) reform of the national collective bargaining system establishing a two-tier structure: industry-wide collective agreements set contractual minima with the objective of maintaining the purchasing power of wages; company-level agreements grant performance-related pay rises.</p>
<p>Cohort 5 (1961-1970) representative cohort: 1966 <u>Cohort size</u> (MF, at the age of 26): 954,437</p>	<p><u>Educational levels (M) in 1980/81:</u> 41% students obtained the upper secondary diploma (at 19 yrs) 20.5% students enrolled at universities (at 19-25 yrs) <u>Unemployment:</u> Av. U rate (1991-2000): 10.4% Youth U rate (15-24 yrs) in 1985: 29.4% <u>Employment (ERm):</u> cohort 1961 at 21 (in 1982): 53.8% cohort 1966 at 21 (in 1987): 47.2%</p>	<p>1995- ... - very low economic growth, with high job creation - deterioration in the quality of new jobs (low labour productivity and total factor productivity) - wage moderation continues - flexibility in the use of labour input is increased - falling unemployment rate - increasing female participation - low (and steady) birth rate <u>Employment (ERm):</u> cohort 1961 at 31 (in 1992): 89.9% cohort 1966 at 31 (in 1997): 84.4% cohort 1961 at 41 (in 2002): 92.3%</p>	<p>Pension reforms in the 1990s lead to a gradual shift from the defined-benefit scheme to a notional defined-contribution scheme. These reforms create a strong link between contributions and benefits, reducing expected pension benefits and introducing incentives to work longer. But they entail a very long transition period: they fully apply only to workers entering employment after 1995. The older cohorts keep the right to retire early, under the old rules. New measures introduced in 2004 raise the retirement age (for the old cohorts). 1995: A special pension scheme is introduced for those self-employed workers characterised by a close and continuous relation with a single company (co.co.co) (L. 335/1995) 1997: the so-called Pacchetto Treu (L. 196/1997) is enacted. Temporary agency work (lavoro <i>interinale</i>) is introduced for the first time in Italy. 2001: the regulation of fixed-term contract is modified (legislative decree 368/2001). A general principle for fixed-term contracts for all employees is established on the basis of “technical, productive, organisational or substitutive reasons”, art. 1, comma 1). 2003: the so-called Legge Biagi (L. 30/2003 and legislative decree 276/2003) is enacted, enlarging the spectrum of atypical contracts.</p>

Sources: Cohort size: Istat, *Ricostruzione intercensuaria della popolazione, 1982-1992 e 1992-2001*, www.demo.istat.it; GDP, GDP per head, unemployment rate: *European Economy*, Autumn 2006; Youth unemployment rate, employment rate by age: Istat, LFS 1977-2003.

Tab. A2: GDP, employment, unemployment in Italy, 1961-2003

(annual percentage change, unless otherwise stated)

	GDP (at 2000 market prices)	GDP per person employed (at 2000 market prices)	Adjusted wage share (% GDP at current factor cost)	Employment (national accounts)	Unemploy- ment rate (%LF)
1961-1970	5,7	6,2	72,2	-0,5	4,7
1971-1980	3,8	2,8	72,2	0,7	6,1
1981-1990	2,4	1,8	68,7	0,6	8,6
1991-2000	1,6	1,6	64,6	0,2	10,4
2001-2003	0,7	-0,5	61,6	1,7	8,7

Source: *European Economy*, Statistical Annex (Autumn 2006)**Tab. A3: Percentiles of individual monthly labour income for dependent workers**

(males and females; euros at 2003 prices for the first row; index number in other rows)

	p10	p25	p50	p75	p90
1989	754.6	1056.4	1282.8	1546.8	1886.4
1989	100.0	100.0	100.0	100.0	100.0
1991	87.9	94.2	97.8	100.4	98.5
1993	59.2	84.6	92.9	100.2	102.7
1995	56.8	78.6	87.7	92.1	99.4
1998	55.4	83.7	91.9	92.1	93.8
2000	58.8	79.6	91.1	90.6	95.6
2002	67.9	80.9	86.6	90.6	97.4
2004	70.2	84.9	89.0	94.8	103.7

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. A4: Percentiles of individual monthly labour income for dependent workers and self-employed

(males; euros at 2003 prices for the first row; index number in other rows)

	p10	p25	p50	p75	p90
1989	754.6	1056.4	1358.2	1660.0	2263.7
1989	100.0	100.0	100.0	100.0	100.0
1991	87.9	94.2	92.8	97.5	92.7
1993	51.3	79.0	87.8	93.4	92.2
1995	49.7	71.0	78.9	87.1	86.1
1998	52.1	74.4	86.8	88.8	86.8
2000	61.9	79.6	86.0	87.3	92.3
2002	67.9	80.9	84.4	92.6	97.4
2004	64.8	77.2	85.8	91.6	93.6

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. A5: Resident households by house tenure, in 1981, 1991 and 2001 (%)

	ownership	rent	Other	Total
1981	59.2	35.2	5.6	100
1991	68.0	25.3	6.7	100
2001	71.4	20.0	8.6	100

Source: ISTAT, Population Census (various years).

Tab. A6: Description of the variables used in the regressions

age_coh	Cohorts' age defined as year minus a single year of birth for each cohort (1925 for cohort 1, 1935 for cohort 2, etc.)
ret_coh2, ret_coh3	Households belonging to the specified cohorts whose head is retired (dummy variable)
bc_coh12	All households from cohort 1 whose head is neither retired nor self-employed, and households belonging to cohort 2 whose head is a blue collar (dummy variable).
bc_coh345	Households belonging to cohort 3, 4 or 5 whose head is a blue collar (dummy variable).
wc_coh2, wc_coh3, wc_coh45	Households belonging to the specified cohorts whose head is a white collar (dummy variable).
man_coh2, man_coh345	Households belonging to the specified cohorts whose head is a manager (dummy variable).
unemp_coh2, unemp_coh3, unemp_coh45	Households belonging to the specified cohorts whose head is unemployed (dummy variable).
self-emp	Households belonging to all cohorts whose head is self-employed or entrepreneur (dummy variable).
1991_wc	Interaction between a dummy variable for 1991 and a dummy variable for households whose head is a white collar.
1995-2000_wc	Interaction between a dummy variable for 1995, 1998 and 2000 and a dummy variable for households whose head is a white collar.
2002-04_wc	Interaction between a dummy variable for 2002 and 2004 and a dummy variable for households whose head is a white collar.
1991_bc, 1993_bc	Interaction between a dummy variable for the specified years and a dummy variable for households whose head is a blue collar.
1995-2004_bc	Interaction between a dummy variable for all years after 1993 and a dummy variable for households whose head is a blue collar.
1991_man, 1993_man	Interaction between a dummy variable for the specified years and a dummy variable for households whose head is a manager.
1993_self, 1995_self, 2002_self	Interaction between a dummy variable for the specified years and a dummy variable for households whose head is either self-employed or entrepreneur.
1998-2000_self	Interaction between a dummy variable for 1998 and 2000, and a dummy variable for households whose head is either self-employed or entrepreneur.
1993-2002_un	Interaction between a dummy variable for all years from 1993 to 2002, and a dummy variable for households whose head is either self-employed or entrepreneur.
Rent	Households with rented accommodation (dummy variable)
Rent_1989-1991; rent_2004	Interaction between Rent and a dummy variable for the specified years.
Ncomp	Number of household members
Nchild	Number of sons or daughters aged under 15
Noth_ret	Number of retired individuals in the household (other than the head)
Noth_earners	Number of earners in the household (other than the head and the spouse)
spw_coh12, spw_coh3, spw_coh45	Households belonging to the specified cohorts where the spouse is working.
sped2_coh12, sped2_coh3, sped2_coh45	Households belonging to the specified cohorts where the spouse has a secondary school diploma.
sped3_coh12, sped3_coh3, sped3_coh45	Households belonging to the specified cohorts where the spouse has a university degree
heduc2_coh1, heduc2_coh2, heduc2_coh3, heduc2_coh4, heduc2_coh5	Households belonging to the specified cohorts where the head has a secondary school diploma.
heduc3_coh1, heduc3_coh2, heduc3_coh3, heduc3_coh4, heduc3_coh5	Households belonging to the specified cohorts where the head has a university degree
North	Households living in the north (dummy variable)
Centre	Households living in the centre (dummy variable)

Table A7: OLS regression results with robust standard errors

(dependent variable: logarithm of household equivalent income)

	Coeff.	t						
			1993_wc	0.024	1.72	Rent	-0.317	-19
age_coh	0.010	3.19	1993_bc	-0.074	-4.95	Rent_1989	0.135	6.81
age_cohsq	0.000	-2.35	1993_man	0.112	4.29	Rent_1991	0.121	6.14
bc_coh1	0.221	6.89	1993_self	-0.144	-6.1	Rent_1993	0.010	0.42
wc_coh1	0.193	5.63	1993_unemp	-0.561	-2.76	Rent_1995	0.038	1.54
self_coh1	0.416	14.92	1993_ret	0.019	1.14	Rent_1998	0.048	1.02
man_coh1	0.298	5.77	1995_wc	-0.070	-4.72	Rent_2002	0.028	1.2
ret_coh2	0.073	5.09	1995_bc	-0.121	-7.89	Rent_2004	-0.038	-1.6
ret_coh3	0.136	5.41	1995_man	-0.003	-0.12	Ncomp	-0.175	-51.94
ret_coh4	0.056	0.95	1995_self	-0.239	-9.73	Nchild	0.016	4.24
Unemp_coh2	-0.340	-2.58	1995_unemp	-0.300	-2.1	Noth_ret	0.196	41.52
Unem_coh3	-0.531	-3.76	1995_ret	-0.012	-0.68	Noth_earners	0.292	63.06
Unem_coh4	-0.844	-5.74	1998_wc	-0.088	-5.21	spw_coh12	0.248	16.99
Unem_coh5	-0.819	-4.73	1998_bc	-0.124	-7.34	spw_coh3	0.287	30.77
wc_coh2	0.268	12.07	1998_man	0.006	0.23	spw_coh45	0.367	50.25
wc_coh3	0.330	12.5	1998_self	-0.107	-4.16	sped2_coh12	0.200	15.76
wc_coh4	0.383	11.26	1998_unemp	-0.387	-2.58	sped2_coh3	0.152	13.68
wc_coh5	0.420	9.31	1998_ret	0.003	0.16	sped2_coh45	0.085	10.32
man_coh2	0.370	12.92	2000_wc	-0.083	-4.55	sped3_coh12	0.310	12.39
man_coh3	0.467	14.95	2000_bc	-0.105	-5.75	sped3_coh3	0.249	14.21
manr_coh4	0.484	12.64	2000_man	-0.034	-1.2	sped3_coh45	0.168	11.88
man_coh5	0.506	9.65	2000_self	-0.077	-2.91	heduc2_coh1	0.337	21.51
self_coh2	0.380	15.31	2000_unemp	-0.344	-2.14	heduc2_coh2	0.289	21.57
self_coh3	0.384	13.3	2000_ret	0.004	0.19	heduc2_coh3	0.162	14.37
self_coh4	0.385	10.62	2002_wc	-0.127	-6.29	heduc2_coh4	0.110	10.78
self_coh5	0.407	8.48	2002_bc	-0.131	-6.61	heduc2_coh5	0.091	6.4
bc_coh2	0.194	10.05	2002_man	0.002	0.08	heduc3_coh1	0.626	25.12
bc_coh3	0.244	9.71	2002_self	-0.043	-1.58	heduc3_coh2	0.536	21.93
bc_coh4	0.254	7.61	2002_unemp	-0.366	-2.13	heduc3_coh3	0.370	19.8
bc_coh5	0.291	6.73	2002_ret	0.010	0.46	heduc3_coh4	0.334	18.25
1991_wc	-0.028	-2.06	2004_wc	-0.125	-5.8	heduc3_coh5	0.220	7.57
1991_bc	-0.027	-2.22	2004_bc	-0.115	-5.37	North-east	0.284	51.21
1991_man	-0.044	-2.07	2004_man	0.012	0.4	North-west	0.294	49.64
1991_self	0.022	1.17	2004_self	0.000	0	Centre	0.193	34.43
1991_unemp	-0.126	-0.79	2004_unemp	0.157	1.01	Constant	6.639	68.15
1991_ret	0.000	-0.03	2004_ret	0.033	1.45			

Number of obs: 39717

F(105, 39611): 454.4

R-squared: 0.5931

Root MSE: 0.39867

Notes: The sample includes only couple households. For cohort 5 we excluded observations in 1989

We tested the following restrictions:

- 1) 1991_self=2_unemp=1991_ret=1993_wc=1993_ret=1995_man=1995_ret=1998_man=1998_ret=2000_man=
=2000_ret=2002_man=2002_ret=2004_man=2004_self=2004_unemp=2004_ret= ret_coh4=rent_1993=
=rent_1995=rent_1998=rent_2002=0
- 2) 1995_wc=1998_wc=2000_wc; 2002_wc=2004_wc; 1995_bc=1998_bc=2000_bc=2002_bc=2004_bc;
1998_self=2000_self; 1993_unemp=1995_unemp=1998_unemp=2000_unemp=2002_unemp
- 3) bc_coh1=bc_coh2=wc_coh1=man_coh1; bc_coh4=bc_coh5=bc_coh3; unemp_coh4=unemp_coh5;
wc_coh4=wc_coh5; man_coh4=man_coh5=man_coh3; self_coh1=self_coh2=self_coh3=self_coh4=self_coh5
- 4) north_east=north_west
- 5) rent_1989=rent_1991
- 6) age_cohsq=0.

The value of the F test is F(50, 39611) = 1.20 [Prob > F = 0.154]

Fig. A4: Actual and predicted mean of household equivalent income by cohort (“GDP model”)

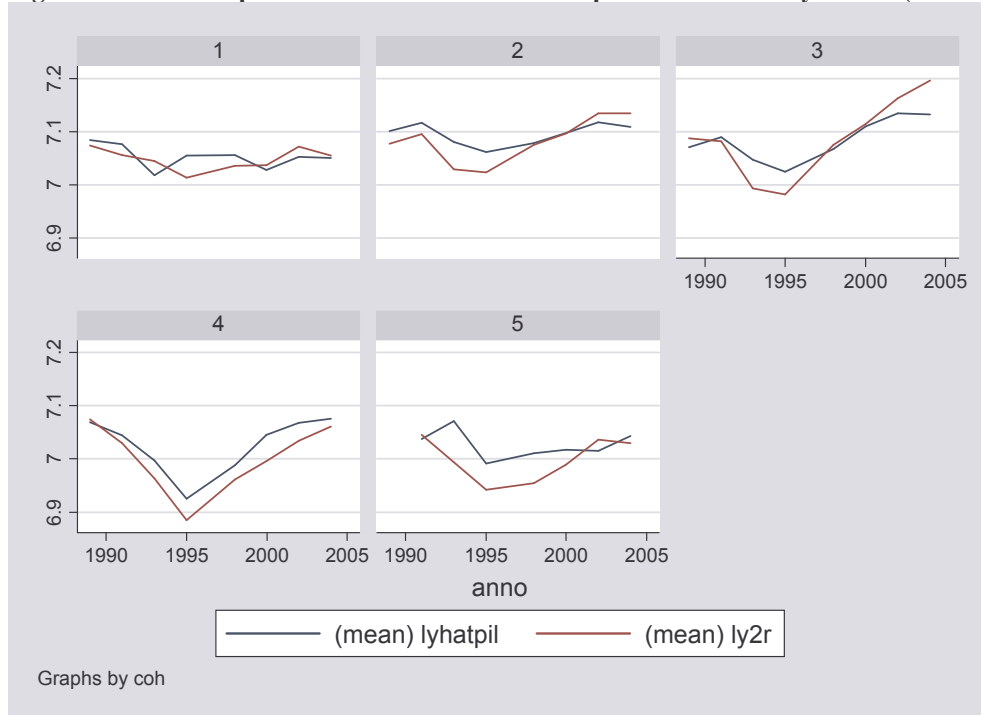
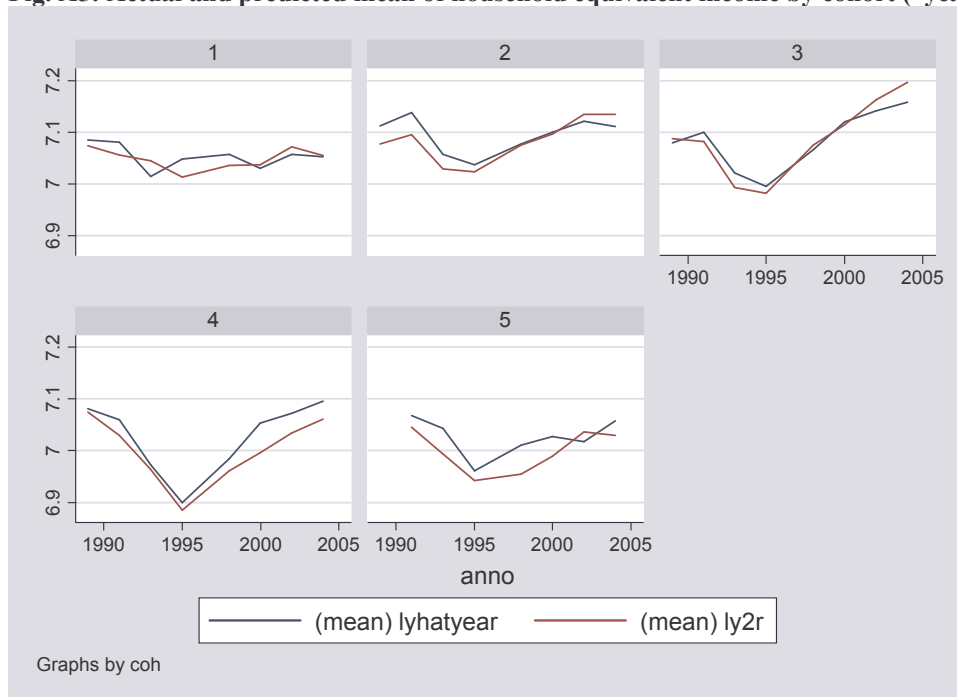


Fig. A5: Actual and predicted mean of household equivalent income by cohort (“year-dummies model”)



Tab. A8: Decomposition of income differences across cohorts at the same age

	cohort 2-cohort 1 about 64	cohort 3-cohort 2 about 54	cohort 4-cohort 3 about 44	cohort 5-cohort 4 about 34
Age	-0.2	-0.1	-0.2	0.0
Occupation	3.5	1.1	-2.2	-3.3
Time	-3.9	-8.2	-10.0	-10.8
Rented Accommodation	-1.3	0.0	-1.0	-1.3
Components	-0.7	1.5	2.7	1.9
N. Earners	3.0	-0.2	-2.1	0.0
Spouse	0.4	3.2	6.7	2.1
Spouse education	0.5	1.7	-0.7	1.0
Head education	-0.1	-0.2	-0.3	-1.6
Region	-0.6	-0.3	-0.6	2.9
Total	0.7	-1.5	-7.6	-9.1
Actual	1.2	1.7	-10.9	-10.3

Notes: Average over 1998 - 2000 for cohort (i+1) minus 1989 for cohort (i) [1991 for cohort 5].

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. A9: Decomposition of income differences across cohorts at the same age

	cohort 2-cohort 1 about 66	cohort 3-cohort 2 about 56	cohort 4-cohort 3 about 46	cohort 5-cohort 4 about 36
Age	-0.2	-0.2	-0.2	0.0
Occupation	4.8	1.6	-1.0	-1.6
Time	-1.9	-5.7	-6.7	-7.5
Rented accommodation	-0.7	-0.5	-1.0	-1.3
Components	2.2	1.9	2.7	2.3
N. Earners	-1.0	-1.4	-3.2	-0.9
Spouse	0.4	2.8	6.0	0.7
Spouse education	0.9	1.4	-0.5	0.7
Head education	0.4	-0.3	-0.7	-0.9
Region	-0.8	0.4	-0.6	1.8
Total	4.1	-0.1	-5.2	-6.6
Actual	6.0	4.4	-6.7	-1.7

Notes: Average over 2000 - 2002 for cohort (i+1) minus 1991 for cohort (i).

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

Tab. A10: Decomposition of income differences across cohorts at the same age

	cohort 2-cohort 1 about 68	cohort 3-cohort 2 about 58	cohort 4-cohort 3 about 48	cohort 5-cohort 4 about 38
Age	-0.1	-0.2	-0.2	0.1
Occupation	7.9	2.4	-0.3	-1.3
Time	0.0	0.8	-1.0	-1.6
Rented Accommodation	0.7	1.4	-0.1	1.1
Components	2.4	3.1	3.8	4.4
N. Earners	-2.5	-3.5	-3.8	-1.4
Spouse	-0.3	3.8	6.6	1.5
Spouse education	1.0	2.5	-0.5	1.0
Head education	1.7	0.8	0.1	-1.2
Region	-0.4	0.1	-0.4	1.0
Total	10.4	11.3	4.1	3.6
Actual	9.0	15.0	5.4	6.9

Notes: Average over 2002 - 2004 for cohort (i+1) minus 1993 for cohort (i).

Source: Authors' calculations on data from the SHIW-HA (release 3.0).

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