Consumption and Income Inequality in Italy

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Abstract

Increasingly, economists rely on microeconomic data to analyze macroeconomic policy shifts and structural reforms. This paper presents stylized facts on labor supply, income, consumption, wealth, and several measures of consumption and income inequality drawn from the Survey of Household Income and Wealth conducted by the Bank of Italy. The Survey spans the 1977-2006 period, has information on consumption, income and wealth, and a sizable panel component that allows econometricians to estimate sophisticated income, consumption and wealth processes and to analyze labor market and portfolio transitions. Given the population changes associated with the demographic transition and the Italian policy reforms of the last two decades, the data represents an ideal playing field for applied macroeconomists.

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1. Introduction

The last two decades have witnessed dramatic changes in the Italian economy: population aging and fall in fertility have been accompanied by a sequence of financial reforms liberalizing credit markets, labor market reforms increasing labor flexibility, and a major pension reform increasing retirement age and reducing benefits for future generations. Fiscal and monetary policy also changed dramatically. A period of rising national debt ended in 1992 with a debt stabilization and slow convergence to the Maastricht criteria; monetary policy has been delegated to the European Central Bank, ending an era of sustained inflation. As a consequence, the macroeconomic environment in which Italian households currently choose how much to work, how much to save, and how to allocate their savings among real and financial assets is very different than the environment of only ten or fifteen years ago.

Increasingly, economists rely on microeconomic data to analyze macroeconomic events and policy shifts. For this purpose, given the rapid changes associated with policy reforms, the Italian economy represents an ideal playing field. This paper brings to the attention of applied researchers the data that can be used to analyze such reforms. It does so presenting stylized facts on labor supply, income, consumption and wealth drawn from the Survey of Household Income and Wealth (SHIW), a representative survey of the Italian population conducted by the Bank of Italy.

Several features of the SHIW are noteworthy. First, it spans the 1977-2006 period, allowing the construction of long time series based on microeconomic variables. Second, it has information on consumption, income, and wealth: these variables are generally not simultaneously available in the same dataset. Third, it has a sizable panel component that allows to estimate sophisticated income, consumption, and wealth processes, and to analyze labor market and portfolio transitions. Fourth, the income, consumption, and labor supply measure of the SHIW track remarkably well the corresponding National Accounts aggregate. Finally, for each of the main variables of interest to macroeconomists, the SHIW contains detailed breakdowns, allowing applied researchers to experiment alternative measures of income (from labor, capital, transfers), consumption (durable, non-durables, imputed rents) and wealth (real assets, financial assets, debt, and components thereof).

The paper is organized as follows. We start in Section 2 by providing details on the SHIW, discussing the survey design, quality of data, and characteristics of the panel
component. In Section 3 we then describe Italy’s macroeconomic background for the period under analysis. We also compare sample averages with national accounts statistics. Next, we show trends in hours and wage inequality (Section 4) and consumption and income inequality (Section 5). The evidence shows that both measures of inequality increased over the sample period, but the growth in income inequality is faster than that in consumption inequality, a result that echoes similar findings for the United States (Blundell, Pistaferri, and Preston, 2008) and the United Kingdom (Blundell and Preston, 1995). We discuss in Section 6 possible explanations behind the finding for Italy, in particular the role of credit markets reform and financial liberalization, labor market reforms, and changes in the nature of income shocks. We conclude that the latter seem to be the dominating force behind the evidence.

2. Household-level data in Italy

In Italy the main source of microeconomic data for macroeconomists is the Bank of Italy Survey of Household Income and Wealth, which collects detailed information on demographics, households' consumption, labor supply, income, real, and financial wealth.¹ The availability of household data on income, consumption and wealth in the same dataset (as well as the presence of a panel component) is what makes the SHIW a unique reference for researchers interested in consumption, income, and wealth inequality, and their changes over time.

2.1. Survey design

The SHIW was conducted on a yearly basis from 1965 to 1987 (with the exception of 1985). Up to 1984 the number of participant households in a typical year was around 4,000. In 1986 the sample size was doubled, and since 1987 the survey has been run every other year (with the exception of a three-year interval between 1995 and 1998). In 1987 the SHIW oversampled rich households to collect more accurate statistics on asset holdings. Consumption data (on both durables and non durbles) are available since 1980, with the

¹ The full data set is publicly available (with documentation in English) at the Bank of Italy’s website, see http://www.bancaditalia.it/statistiche/indcemp/bilfait/dismicro.
exception of 1986, when only total consumption information is available. Income data are available for all years. Information on hours and other dimension of labor supply are available since 1987. Wealth information is complete only starting in 1987; before 1987, only information on real assets is available. The last available survey year is 2006.

The SHIW is a representative sample of the Italian resident population. Sampling is in two stages, first municipalities and then households. Municipalities are divided into 51 strata defined by 17 regions and 3 classes of population size (more than 40,000, 20,000 to 40,000, less than 20,000). Households are randomly selected from registry office records. The unit of observation is the family, which is defined to include all persons residing in the same dwelling who are related by blood, marriage or adoption. Individuals selected as “partners or other common-law relationships” are also treated as families. The interviews are generally conducted between April and July of each year, thus flow variables refer to the previous calendar year, and stock variables are end-of-period values.

2.2. Data quality

To gauge the quality of the data, we report survey response rates and compare the levels and trends of averages computed from micro data with the corresponding aggregates from National Accounts data. Table 1 reports response rates. Ineligible units include the families of persons unknown, dead or emigrated. The gross response rate is the ratio of responses to contacted families. The net response rate is the ratio of responses to contacted families net of ineligible units. Response rates increase after 1991 because participation to the panel component of the survey was made voluntary, but decline slightly over time, before picking up again in the last two surveys. Useful information on the quality of the SHIW is reported in Brandolini and Cannari (1994) and Brandolini (1999).

We next compare per-capita averages in the SHIW and in the National Accounts for disposable income and total consumption expenditures. Per-capita averages in the SHIW are obtained using sampling weights. Variables are deflated using the CPI and (before 1999)

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2 For a few years, separate information is also available on food expenditure and medical expenditure. Durable spending is broken down in three main categories, vehicles, furniture, and jewelry (see Bertola, Guiso, and Pistaferri, 2005).
converted to euro. Figure 1 plots average per capita total consumption in the SHIW and the corresponding aggregate from National Accounts data.\(^3\) We generate the former by taking the sample average of real per-capita household consumption. We generate the latter by dividing real total domestic consumption by the end-of-year resident population. We normalize both series to equal 1 in the initial year (1981).

Figure 1 shows that consumption growth data from the SHIW track the National Accounts equivalent quite well, including the drop in real terms in 1993. There is some evidence of less-than-perfect tracking only in the last two years. Figure 2 repeats the exercise for non-durable consumption (in the SHIW, our measure of non-durable consumption excludes payment in kind and imputed rents). Again, the track of growth rates in the series is quite good.

Trends in disposable income are reported in Figure 3. We generate the National Accounts measure by dividing real national disposable income by the end-of-year resident population. We compare it with two measures of real disposable income series from SHIW, one that excludes and one that includes financial income (which in the SHIW is available only since 1987), both expressed in per capita terms. We normalize the three series to equal 1 in 1987. The figure shows that there is a fairly good tracking in the income dimension as well.

While growth rates of per capita consumption and income match the National Accounts aggregate fairly well, the levels are underestimated. The degree of underestimation is in the order of 25 percent (for income) and 30 percent (for consumption), but as is evident from Figures 1-3, it has no trend or specific time pattern.

To complete our analysis of comparing trends of relevant economic variables from the SHIW with trends in aggregate data, in Figure 4 we plot the employment-population ratio (the share of persons of working age 15-64 in employment) in the SHIW and in the OECD data. The two series are close both in the levels and growth rates, especially after the increase in sample size of the late 1980s. The SHIW series captures the declines of the early 1980s and early 1990s, as well as the rapid increase of the last decade.

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\(^3\) The consumption measures come from the ConIst database at ISTAT (the Central Statistical Office). The disposable income aggregate series is obtained again from ISTAT, at [http://www.istat.it/conti/nazionali/Tavole-conti.xls](http://www.istat.it/conti/nazionali/Tavole-conti.xls) (Table 6, net national disposable income).
2.3. Panel component

Starting in 1989, each SHIW has re-interviewed some households from the previous surveys. In the panel component, the sampling procedure is also determined in two stages: (1) selection of municipalities (among those sampled in the previous survey); (2) selection of households re-interviewed.

There is a fixed component in the panel (for instance, households interviewed 10 times between 1987 to 2006) and a new component added every survey (for instance, households interviewed only in 2004 and 2006). Details are provided in Table 2, which reports the number of households interviewed in more than one survey. For example, of the 7,768 households that make up the sample in the 2006 survey, 30 have participated since 1987, 159 since 1989, 393 since 1991, and so forth. The households interviewed for the first time in the 2006 survey number 3,811. The last row shows that the panel component has increased over time: 15 percent of the sample was re-interviewed in 1989, 27 percent in 1991, and so on. In the last survey more than half of the sample are panel households. Previous attempts to exploit the panel dimension of the consumption and income SHIW data include Pistaferri (2001) and Jappelli and Pistaferri (2000, 2006, 2008).

2.4. Sample selection

We now describe our sample selection for the empirical analysis below. We form two samples, one of individuals for the purpose of studying labor supply, wage trends and wage inequality, and one of households for studying trends and inequality in household consumption, income, and wealth.

The original sample of individuals includes 345,847 units surveyed between 1977 and 2006. Given the focus on labor supply, we excludes those younger than 25 or older than 60. The purpose of this sample selection criterion is to select individuals already out of school and not yet retired. This reduces the sample to 181,376 units. To reduce the impact of outliers, we eliminate those with an hourly wage below 1/2 the minimum wage, which we take to be the average wage paid at a local McDonald’s (Ashenfelter and Jurajda, 2004). Given that hours are available only since 1987, this selection drops all data before 1987, as well as those
with missing wages due to non-participation. The individual sample includes 54,945 individuals, 33,572 males and 21,373 females interviewed between 1987 and 2006.4

The original sample of households includes 115,835 units. We exclude households whose head is younger than 25 or older than 60. We make the definition of the head of the household uniform with that adopted in the other countries studied in this project. Hence, for households formed by couples (i.e., households in which there is one member denoted as the head or reference person, and another denoted as the spouse), we treat the male in the couple as the head of the household. We also eliminate those with coding errors in family composition (multiple spouses and same-sex spouses), zero or negative non-durable consumption, and households whose head has an hourly wage below 1/2 the minimum wage. The final sample includes 77,321 households. Monetary variables in the SHIW are not top-coded. Detailed variable definitions are in the Appendix.

3. The macroeconomic background

Our microeconomic data span the 1977-2006 period. During this period Italy went through three recessions, one in 1981-83, a particularly strong one in 1992-93 (with consumption falling in real terms for the first time since the end of WWII), and a third recession in 2001-04. The economic slowdown associated to these three episodes is quite visible from the dynamics of consumption and disposable income (Figures 1 and 3).

Throughout the 1990s and 2000s, the economy was characterized by slow or even negative productivity growth. Among the relevant institutional changes impacting the macroeconomic background, one must mention at least two major pension reforms (the Amato reform of 1992 and the Dini reform of 1995, named after the prime ministers who signed them into law), aimed at reducing the imbalance in the social security system induced by the progressive aging of the population; a process of banking reform and financial liberalization culminating in the accession to the Euro in 1999; and a variety of reforms aimed at increasing the degree of flexibility of the labor market.

The last decade has also witnessed an appreciation of the housing stock and massive privatization of state-owned firms and public utilities. These developments have affected the

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4 The sample used to construct Figure 7 does not exclude those with missing wages due to non-participation.
dynamics and composition of household real and financial wealth, as shown in Figure 5. In the top panels we plot the medians of the wealth-income ratio (left) and the financial wealth-income ratio (right). Wealth is the sum of primary residence, other real estate, business wealth and financial wealth, less financial liabilities. Financial wealth includes transaction accounts, CDs, bonds, stocks, mutual funds, investment accounts, defined contribution pensions, and the cash value of life insurance. There is a strong increase in the wealth-income ratio throughout the 1990s and a slowdown in the 2000s. The increase reflects appreciation of the housing stock (about 75 percent of wealth is held in real estate), as well as appreciation of financial stocks. The slowdown is mostly due to falling prices and stock market participation after 2001. The increase in the wealth-income ratio in the 1990s also reflects higher rates of homeownership, as is evident from the bottom panel.

The rapid demographic transition represents probably the most important event of the last four decades. On the one hand, there has been a rapid aging of the population. This is due partly to an increase in life expectancy, and partly to a dramatic fall in the fertility rate (from 2 in 1980 to 1.2 in 2004). But the demographic transition has also affected the structure of the population inducing dramatic changes in family size and composition. In Figure 6, top panels, we plot the proportion of single males and females (left) and couples with and without children (right). In 1977, couples represent about 85 percent of all household types. By 2006, they are about 70 percent. The decline is almost exclusively accounted for by a decline in the proportion of couples with children. In direct contrast, the proportion of single households triples, from 6 percent in 1977 to 18 percent in 2006. As a consequence of these trends, average household size has declined substantially (bottom left panel), and at least visually, there appear to be strong cohort effects underlying such decline (bottom right panel). In particular, relatively younger cohorts (e.g., born in 1956-60) appear to have smaller families than older ones (e.g., born in 1931-35).

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5 In this figure, as well as the ones below, we plot both the original data points and those obtained applying a smoothness filter (local OLS regression).

6 Brandolini, Cannari, D’Alessio and Faiella (2004) describe the composition and distribution of household wealth in Italy and assess the characteristics and quality of the wealth data in the SHIW. They also propose appropriate statistical tools to adjust for non-response, non-reporting and under-reporting. The study finds an increase in wealth inequality during the 1990s, and that the increased concentration of financial wealth was an important factor in determining this path.
Macroeconomic and demographic developments and labor market reforms affect labor market participation and the structure of the labor force. We use the sample of individuals aged 25-60 to describe such trends. The sample extends from 1987 to 2006, because data on hours are not collected before 1987 (with the exception of information on part-time employment which exists since 1986). The top left panel of Figure 7 plots the proportion of people reporting to be employed full-time against survey year. It is flat for men and increasing for women (a 30 percent increase over the last two decades). But despite the growth of female participation, Italy still exhibits much lower activity rates than most of other European countries. The right panel shows that the proportion of people reporting to be employed part-time has increased for both groups, although the increase for women is much higher (a three-fold increase from 3 to almost 10 percent). These trends are explained by a series of labor market reform (especially the 1997 Treu package) that eased entry in the labor market of groups with low labor force attachment. The bottom panel plots average weekly hours (conditioning on being employed). There is no clear trend for males, while for females average weekly hours fall as an effect of the increased weight played by part-time workers.

4. Hours and wages inequality

From the individual data set, we construct a measure of the hourly wage as annual earnings divided by annual hours. The data refer again to the 1987-2006 period because hours information is not collected prior to 1987. We collapse wage data for both males and females and compute four indexes of inequality: the 90\textsuperscript{th}-50\textsuperscript{th} percentile difference, the 50\textsuperscript{th}-10\textsuperscript{th} percentile difference, the Gini coefficient, and the variance of the logarithms of wages. The first two indexes measure inequality in different parts of the distribution (the top and bottom part, respectively); the other two indexes are more traditional measures of inequality, with the variance of logs being particularly useful for its additivity in error component models.\footnote{These indexes have different pros and cons for the measurement of inequality. See Cowell (2007) for an overview.} The time trends of these four indexes are plotted in Figure 8.
All inequality measures show a consistent pattern, recording a strong increase between 1989 and 1993; after that, all indexes are flat. The increase in wage inequality is not negligible. The Gini index increases by about 25 percent; the variance of logarithms by almost 50 percent. As we shall see, these trends are common to all measures of income we use (at the household or individual level).

In Figure 9 we plot three frequently used measures of labor market premia: the gender premium (the ratio of average male wage to average female wage), the education premium (the ratio of average college graduate wage to non-college wage), and the experience premium (the ratio between the average wage of males aged 45-55 and the average wage of males 25-35 years old). We also report in the fourth panel the evolution of residual wage inequality. This is obtained as the variance of the residual of a log wage regression, where we control for a fourth-order age polynomial, regional dummies (North, Center, South), a gender dummy, and years of schooling. The wage regression is run separately for each year, providing a time series of residual inequality. In comparing the labor market premia one should consider that they are conditional on labor market participation, hence also reflect endogenous selection into work.

The top-left graph shows that the gender premium does not display a clear-cut trend over the sample period, with the average premium ranging between 2 and 6 percent in most years. The education (college) premium is about 60 percent throughout the sample, increasing slightly in the early 1990s and then flattening or even slightly declining. There is a strong, sustained increased of the experience premium and of residual wage inequality throughout the 1990s. Unlike the unconditional variance of log wages, residual wage inequality does not appear to flat out in the late 1990s/early 2000s.

In Figure 10 we report separate data for males and females, and characterize the dynamics of wage and labor supply inequality. The top panels plot the variance of log wages and log hours against time, separately for males (the solid line) and females (the dashed line). These graphs are, of course, conditional on labor market participation. The trends are similar for the two genders, confirming a general pattern of increase in inequality in the early 1990s followed by a flatting out of the profiles. However, the levels are different. There is more wage inequality and substantially more hours inequality (reflecting differences in the intensive margin at the annual frequency) within the female group. The bottom panels report time trends for the wage-hours correlation for males (left panel) and females (right panel).
While both correlations are negative throughout the period, the one estimated for females is
growing in absolute value, while the one estimated for males is basically flat. The negative
sign of these correlations indicates that the income effect dominates the substitution effect, in
agreement with the empirical labor literature; it may also reflect division bias (wages are the
ratio of earnings and hours, hence there is a mechanical negative correlation between wages
and hours if hours are measured with error). However, there is no obvious reason to expect
the amount of division bias to change over time, so the trends should still be informative.

5. Income and consumption inequality

In this section we turn to the household data set, and analyze first the variance of log
total household earnings (the sum of income from labor of all household members). In
Figure 11 we plot the trends of three different measures, ranked in order of complexity:
variance of log household earnings, variance of log equivalized earnings (obtained dividing
household earnings by the OECD equivalence scale), and variance of residual earnings
(obtained as the year-to-year residuals of a regression of log earnings on a fourth-order age
polynomial, years of schooling, a dummy for gender, regional dummies, family size and
number of children). The figure shows a clear ranking of inequalities. The variance of
equivalized log earnings is higher than the variance of log row earnings, which in turn
exceeds the variance of residual log earnings. Each measure of inequality declines slightly in
1980s, grows dramatically between 1989 and 1995, and is basically flat afterwards.

To check if the time pattern of inequality depends on the use of the variance of logs as
our preferred measure of inequality, in Figure 12 we report additional insights on the
dynamics of the distribution of earnings. In these graphs all measures of earnings are

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8 Brandolini (1999) provides the most comprehensive analysis of income inequality in Italy and its historical
trends (1947-1995) using several datasets: the early surveys on the personal distribution of incomes conducted
in by the Doxa Institute in 1947-48, the Bank of Italy SHIW, the Euro-Panel, and the Italian Central Statistical
Office. The quality of the surveys is assessed collecting evidence on differential response rates and mis-
reporting, and by comparing grossed-up survey results with aggregate figures from the labour force survey and
the national accounts. The evidence suggests a slow decline in income inequality – as measured by the Gini
index – from the early seventies throughout the 1980s.

9 The OECD equivalence scale is defined as $E=1+0.5 \times (\text{number of children})+0.7 \times (\text{number of adult members}-1)$. A child is any household member aged 16 or less.
equivalized using the OECD equivalence scale (different measures provide similar patterns). The picture painted by the variance of log earnings in the top left panel (which reproduces the same variance of log earnings in Figure 11) does not change if we use the Gini coefficient (top right panel). In both cases there is a declining pattern in the 1980s, a strong increase in the early 1990s, and a flating out of the profiles at the newly reached higher level in the final part of the sample period.

The two graphs at the bottom of Figure 12 plot the 90th-50th and 50th-10th percentile differences, and provide information on which part of the distribution is responsible for the increase in inequality. The top portion of the distribution pulls out from the median throughout the entire period, with the notable exception of the early 1990s (when inequality as measured by the Gini coefficient and the variance of logarithms increase the most), suggesting that most of the increase in inequality in that period is due to an increase in inequality at the bottom of the distribution. Indeed, the graph for the 50th-10th percentile difference reported in the top right panel is consistent with this view.

Figure 13 considers how inequality changes when we move from heads’ earnings to household disposable income, with two intermediate steps: household earnings and household disposable income net of financial income. Since financial income is not available before 1987, the household disposable income series is shorter than the other three series. All measures are once more scaled by the OECD equivalence scale. Several things are worth noticing. The variance of log heads’ earnings is lower than the variance of log household earnings, implying that family labor supply does not play an important role in reducing inequalities.11 Second, the difference between the variance of log household earnings and the variance of log disposable income net of financial income suggests that government and family transfers (not taxes, because all measures of income are after-tax) reduce income disparities (the variance of disposable income is about 0.05 lower than the variance of earnings). Finally, given the skewed distribution of financial assets, including financial income in the definition of disposable income increases inequality.

To put Italian income inequality in perspectives, Figure 14 reports standardized Gini indexes in 16 OECD countries computed using the Luxembourg Income Study database. By

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10 Demographic variables absorb a larger part of the variability of income (the $R^2$ of the regression is in the 0.35–0.4 range).
11 Roughly speaking, this means that the earnings of different household members do not exhibit a strong negative covariance.
international standards, Italy currently features high income inequality. By 2000, the variance of log disposable income had reached a level of 0.7, i.e. a standard deviation of 84 percent. This puts income inequality in Italy at a notch just below high-inequality countries such as the United Kingdom or the United States.

We next focus on the variance of log nondurable consumption. As in Figure 11, we plot the trends over time for three measures: row, equivalized, and residual inequality. Figure 15 confirms the finding that the variance of the equivalized measure ranks above the row measure and the residual measure, respectively. The trends in consumption inequality are rather different that the corresponding measures of income: there is a slight decline in the 1980s, a mild increase in the 1990s, and a period of stability afterwards. At the end of our sample the variance of log consumption is about the same as in the initial periods, ranging from 20 to 25 percent for the raw and equivalized measures, and 12 to 15 percent for residual inequality. Figure 15 also shows that the swings in consumption inequality are more pronounced for residual inequality than if we use raw or equivalized measures.

To gain further insights in the evolution of the consumption distribution, in Figure 16 we plot the variance of log consumption, the Gini coefficient and the 90\textsuperscript{th}-50\textsuperscript{th} and 50\textsuperscript{th}-10\textsuperscript{th} percentile differences. In each case, we use OECD equivalized measures. The Gini coefficient and the percentile differences follow a similar trend as the log variance: a period of stability in the 1980s is followed by increase in the 1990s. The noticeable difference is that while the variance of logs and the Gini coefficients decline after 2000, the percentile differences grow almost monotonically even in the later part of the sample.

6. The link between consumption and income inequality

To conclude our descriptive analysis, we combine information on income and consumption inequality in Figure 17. The solid lines are for income, the dashed ones for consumption. The left axis is for income, the right one for consumption, but the two series are plotted on the same scale to highlight different trends. Income is measured as disposable income net of income from assets, and consumption as nondurable spending. Both measures are equivalized using the OECD equivalence scale. The main message of this graph is that,
regardless of the measure of inequality, income inequality is higher than consumption inequality, and over our sample period it has grown faster than consumption inequality.

It may be argued that the correct perspective for studying consumption and income inequality is a life-cycle one, tracking over time the inequality of a sample of people born in the same year, and not of a sample of the general population as we have done so far. In Figure 18 we restrict attention to the cohorts born in the 1940s and 1950s, and track the inequality of household head’s earnings, household earnings, equivalized disposable income, and equivalized nondurable consumption. People born in 1950 were 34 years old in 1984 and 56 years old in 2006, the last year of our sample. Thus, given the length of our sample, the cohort analysis is capable to track consumption and income of a substantial portion of the life-cycle.

The stylized facts uncovered in the total sample analysis are confirmed by the cohort analysis: (1) income, earnings and consumption inequality grow over time, (2) the growth in mostly concentrated in the first half of the sample period, and (3) income inequality grows more than consumption inequality. For example, the growth in the variance of log disposable income of the cohort born in the 1950s (1940s) between 1984 and 1995 (the year that divides the sample approximately in half) is 0.14 (0.10) log units, while over the same interval the variance of log consumption increases by about 0.03 (0.04) log units.

To interpret these results, consider first the fact that income and consumption inequality of each cohort grow over time. Suppose that the income of each cohort is the sum of a random walk process (the permanent part) and an i.i.d. error (the transitory part), a very popular characterization in panel data on incomes (see, e.g., Meghir and Pistaferri, 2005). In this case, the variance of income of this cohort should grow linearly over time and the slope of the profile should be constant. To explain changes in the slopes one needs to appeal to non-stationarity in the variance of the innovations. For consumption, recall the insight of Deaton and Paxson (1994). If individual consumption follows a martingale, the variance of consumption of a cohort of individuals should grow over time. At first sight, the data do not seem inconsistent with this hypothesis. But what explain the diverging trends in income and consumption inequality?

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12 For brevity, we focus on two “representative” cohorts. The patterns for younger or older cohorts are similar. We use data for the 1984-2006 period because before 1984 age is only available in wide intervals.
A first possibility is that in the 1990s Italian households have been more able to smooth income shocks, due to financial markets reforms and improved access to credit. The second possibility is that in the 1990s the increase in income inequality is primarily of transitory nature, and transitory shocks are easier to insure than permanent shocks. The increase in the variance of transitory shocks, often termed “income instability” (Gottschalk and Moffitt, 2005), is most likely associated to labor market reforms that increase wage flexibility or increase job turnover. Both hypotheses are plausible, given the sequence of financial and labor market reforms.

In the 1990s there were a number of credit market reforms: the 1993 banking reform, which increased competition among banks; the vast process of privatization of the banking sector of the early 1990s; the process of financial market integration brought about by EMU, which opened up competition from foreign banks; the increased in financial product choice, which resulted in longer mortgage maturities and higher loan-to-value ratios; and an improvement in credit infrastructure due to the creation of information sharing institutions (the Italian major credit bureau started to operate in 1991. The outcomes of this reform process were a strong decline in interest rates following EMU, a sharp increase in the propensity to borrow and the fraction of people borrowing, and a reduction in borrowing constraints.

At the same time, the labor market also went through a number of major reforms. In 1987, the use of Fixed Term Contracts (FTC) was widened through collective agreements, although it was still heavily regulated. In 1997 the Treu package widened the number of valid cases for use of FTC, further expanded in 2001. Temporary Work Agencies (TWA), whose operations started in 1998, were extended in 2000 and 2003 and allowed to deal also with unskilled workers. Overall, these reforms increased the flexibility of the labor market substantially. As a consequence of these reforms, the OECD index of Employment Protection Legislation (EPL) was 3.6 in the late 1980s, 2.7 in the late 1990s, 1.9 in 2003 (the value for the US is still a distant 0.2).

To sort out the two competing explanations, in Jappelli and Pistaferri (2008) we decompose the variance of consumption growth into a component that depends on the variance of permanent income shocks and one that depends on the variance of transitory

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13 We stress the role of credit market rather than that of government-provided insurance because during the sample period we examine social insurance has been stable, if not declining.
shocks. We use the panel section of the SHIW to estimate a time series of the variances of the income shocks. We find that the increase in income inequality is largely due to an increase in transitory shocks, while the weight of permanent shocks in total income inequality falls over time. We estimate the variances of the two shocks using formulae provided in Meghir and Pistaferri (2005). Assume that log income is given by the following process:

\[
\ln y_{it} = X_{it}' \beta + P_{it} + \varepsilon_{it}
\]

\[
P_{it} = P_{it-1} + \zeta_{it}
\]

Where \(P\) is the permanent component (with innovation \(\zeta\)) and \(\varepsilon\) the transitory component. Define \(g_{it} = \Delta(\ln y_{it} - X_{it}' \hat{\beta})\), the residual in first differences. Meghir and Pistaferri (2005) show that the variance of the two shocks can be identified using:

\[
E(\varepsilon_{it}^2) = -E(g_{it} g_{it+1})
\]

\[
E(\zeta_{it}^2) = E(g_{it} (g_{it+1} + g_{it} + g_{it-1}))
\]

The estimates of the variances (with 95% confidence bands) are shown in Figure 19. The variance of transitory shocks more than triples over the 1989-98 period, and it declines afterwards. The variance of permanent shocks displays a strong increase only in 1993 (concurrently with the recession of that year), but it is basically flat afterwards. Comparing these two figures with the trends reported in Figure 13, it appears clear that the swings in overall income inequality have been practically induced by swings in the transitory component.

In Jappelli and Pistaferri (2008) we also estimate the degree of consumption smoothing with respect to permanent and transitory shocks, and test if it has declined in the later part of the sample. Our point estimates of the effect of income shocks broadly support the permanent income hypothesis: permanent shocks impact consumption one-for-one, while transitory shocks have a much smaller effect, albeit not exactly zero, which explains why consumption inequality rises even in the absence of a strong growth in the variance of the
permanent component. We also find that during the sample period the ability of consumers to smooth income shocks has not changed.\footnote{Alternatively, credit market reforms have benefited only those who were already able to smooth.}

7. Conclusions

This paper presents stylized facts on labor supply, income, consumption, wealth, and several measures of consumption and income inequality drawn from the Survey of Household Income and Wealth conducted by the Bank of Italy. The Survey spans the 1977-2006 period, has information on consumption, income and wealth, and a sizable panel component that allows econometricians to estimate income, consumption and wealth processes and to analyze labor market and portfolio transitions. Given the population changes associated with the demographic transition and the Italian policy reforms of the last two decades, the data represents an ideal playing field for applied macroeconomists.

Our analysis shows that after declining through most of the 1970s and 1980s, income inequality in Italy grew dramatically in the early 1990s and it has stayed at this higher level until very recently. Most of this increase is of transitory nature, i.e., related to a variety of economic phenomena that increase the degree of instability of earnings and incomes, rather than related to shifts in the wage structure, which appears to be episodic (during the 1993 recession) or picking up only in very recent years. In particular, we suggest that the labor market reforms of the 1990s and 2000s may have been behind the increase in earnings instability.

While there is some increase also in consumption inequality, it is much slower than in income inequality. One way to interpret this discrepancy is through the lens of a standard life-cycle permanent income hypothesis framework, in which consumers respond almost fully to permanent shocks, and much less to transitory shocks (unless credit market imperfections produce excess sensitivity). In Jappelli and Pistaferri (2008) we find that three facts are behind the slower rise in consumption inequality. First, the variance of permanent shocks has not changed significantly over the sample period. Second, the variance of transitory shocks has increased. Third, consumers exhibit some excess sensitivity with respect to transitory
shocks. This means that consumption inequality does grow, but not as much as it would have grown if most of the increase in income inequality had been due to changes in the wage structure.
References


Appendix: Variables’ Definitions

**Labor supply.** Hours worked and participation (full-time, part-time) are available for each household member. Individuals are asked how many hours they work on average each week (including separate information for overtime), and how many weeks in the year.

**Consumption.** Consumption is the sum of durable and non-durable consumption; the latter includes imputed rents on owner-occupied housing. Separate measures are available for each of these items. SHIW asks respondents only few consumption questions. Non durable goods except food is elicited using a broad question on average monthly expenditure on all items except for a few listed durable goods; another question refers to monthly expenditure on food alone. Battistin, Miniaci and Weber (2001) assess the quality of this expenditure data comparing it to the corresponding diary based survey (SFB) run by the official statistical office (ISTAT) in the 1995 wave. They find that recall expenditure questions don’t suffer from excessive item non-response, or at least display similar item non-response than past household income or earnings. Secondly, the difficulty that respondents have in answering such questions varies with characteristics of the respondent. Finally, the recall total expenditure questions displays considerable heaping and rounding. This is a familiar problem and there are ways of dealing with it; so for most analysis this presents relatively minor problems (see Heitjan and Rubin, 1990).

**Earnings.** Earnings are the sum of wages and salaries, self-employment income, less income taxes. Wages and salaries include overtime bonuses, fringe benefits and payments in kind, and exclude withholding taxes. Self-employment income is net of taxes and includes income from unincorporated businesses, net of depreciation of physical assets. Capital income includes imputed rents on owner-occupied housing.

**Disposable income.** Disposable income is the sum of household earnings, transfers, pension benefits, capital income and income from financial assets, net of taxes and social security contributions. Validation studies report that disposable income is under-reported by 25 percent with respect to the national accounts data, while consumption is under-reported by 30 percent.

**Real assets.** Real asset values are reported at the end of each year and are elicited directly, without use of bracketing. For real assets, the SHIW reports information on primary residence, investment real estate, business wealth, the stock of durable goods, other non-financial assets (jewelry, gold coins, art objects, valuable furniture, and other valuables), and debt. The latter is the sum of mortgage and other real estate debt, consumer credit, personal loans and credit card debt. Each of these items is available separately, but since Italians actually borrow very little, we choose to focus on total indebtedness.

**Financial assets.** Calculation of amounts held in financial assets requires a number of imputations and assumptions. First of all, the list of financial assets on which households report changes over time. We group these assets into 10 categories: (1) currency; (2) transaction and savings accounts; (3) certificates of deposit; (4) Treasury bills; (5) long-term government bonds; (6) other bonds; (7) stocks; (8) mutual funds and investment accounts; (9) cash value of defined-contribution pension plans; (10) cash value of life insurance. Second, households generally report brackets of the amount invested in each financial asset. The problem of bracketing can be handled by assuming that households own the mid-point of the interval or by applying more sophisticated imputation procedures. Imputation requires modeling the responses within each bracket, and its advantage diminishes when the number of brackets is relatively detailed, as in the SHIW.

**Liabilities.** Liabilities are the sum of mortgage and other real estate debt, consumer credit, personal loans and credit card debt.
Table 1
Response rates in the Survey of Household Income and Wealth

<table>
<thead>
<tr>
<th>Year</th>
<th>Contacted families</th>
<th>Responses</th>
<th>Refusals</th>
<th>Absent units</th>
<th>Ineligible units</th>
<th>Gross response rate</th>
<th>Net response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>22,344</td>
<td>8,274</td>
<td>9,427</td>
<td>3,855</td>
<td>788</td>
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<td>6,962</td>
<td>9,481</td>
<td>579</td>
<td>32.5</td>
<td>33.2</td>
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<tr>
<td>1993</td>
<td>15,759</td>
<td>8,089</td>
<td>3,152</td>
<td>2,761</td>
<td>1,756</td>
<td>51.3</td>
<td>57.8</td>
</tr>
<tr>
<td>1995</td>
<td>15,606</td>
<td>8,135</td>
<td>3,653</td>
<td>2,510</td>
<td>1,308</td>
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<td>2,680</td>
<td>1,400</td>
<td>43.9</td>
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<tr>
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<td>8,001</td>
<td>10,461</td>
<td>2,420</td>
<td>802</td>
<td>38.3</td>
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<tr>
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<td>8,011</td>
<td>14,179</td>
<td>1,166</td>
<td>476</td>
<td>34.3</td>
<td>35.0</td>
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<tr>
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<td>22,018</td>
<td>8,012</td>
<td>12,991</td>
<td>1,015</td>
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<td>36.4</td>
<td>37.3</td>
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<tr>
<td>2006</td>
<td>18,510</td>
<td>7,768</td>
<td>6,603</td>
<td>4,139</td>
<td>304</td>
<td>42.0</td>
<td>42.7</td>
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</table>

Note: Ineligible units include the families of persons unknown, dead or emigrated. The gross response rate is the ratio of responses to contacted families. The net response rate is the ratio of responses to contacted families net of ineligible units.

Table 2
Panel households of the SHIW, 1987-2006

<table>
<thead>
<tr>
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<td>701</td>
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<td>245</td>
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<td>177</td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

Cross-sectional sample size | 8027 | 8274 | 8188 | 8089 | 8135 | 7147 | 8001 | 8011 | 8012 | 7768 |
Percentage of total sample | 14.6 | 26.7 | 42.9 | 44.8 | 37.3 | 48.4 | 45.0 | 45.0 | 50.9 |     |
Figure 1: Average per-capita total consumption in the SHIW and in the National Accounts

Figure 2: Average per-capita non-durable consumption in the SHIW and in the National Accounts
Figure 3: Average per-capita disposable income in the SHIW and in the National Accounts

Figure 4: Employment-population ratio (15-64 years old) in the SHIW and in OECD data
Figure 5: Household wealth

Figure 6: The demographic transition
Figure 7: Labor market participation

Figure 8: Hourly Wage Inequality
Figure 9: Wage premia

Figure 10: Labor supply inequality
Figure 11: The variance of log household earnings

Figure 12: Household earnings inequality
Figure 13: From head’s earnings inequality to household disposable income inequality

Figure 14: Gini index in 2000 (Italy=100)
Figure 15: The variance of log consumption

Figure 16: Consumption inequality
Figure 17: Consumption and income inequality

Figure 18: Income and consumption inequality by cohort
Figure 19: Variances of transitory and permanent income shocks