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The Well-Being of Italians: A Comparative Historical Approach

Andrea Brandolini* and Giovanni Vecchi**

Abstract

The paper describes the evolution of the well-being of the Italians during the 150 years since the country's unification. The progress in material standard of living was substantial, with GDP per capita growing 13 times between 1861 and 2010 and hours of work (and hence effort) falling considerably, but was roughly in line with that experienced by most other European countries. By relying on a novel database on household budgets, the paper shows that economic growth was accompanied by a long-run reduction of inequality that appears however to have been reversed in the last two decades. Progress was not limited to the economic domain: educational attainment improved considerably, although less than in other countries; on the other hand, the increase in life expectancy was spectacular and brought Italians to lead the international ranking.

JEL Classification: D31.
Keywords: Italian history, human progress, income inequality

Contents

* Bank of Italy, Department for Structural Economic Analysis.
** University of Rome "Tor Vergata".

1. Introduction[1]

In 1861, a newborn Italian could expect to live for another 29 years. One and a half century later, life expectancy at birth has increased to 82 years, 84.8 for females and 79.3 for males. With a gain of 50 and more years over 150 years, Italians have climbed up to the top of the country ranking by life expectancy, and Italy stands among the best performers world-wide. There is hardly any other indicator which is as effective as life expectancy to gauge in a single number the progress of a population. On this account, Italy since unification in 1861 is undeniably a success story.

Yet, this is hardly the end of the story. Human well-being is a multifaceted concept. Living longer is an achievement by itself, but it also matters how people *do* live. Access to consumer goods and leisure time, for instance, is important. The capability of choosing one's own life is even more important. However significant, life expectancy cannot account for these different aspects of well-being, nor can do per capita income, another popular indicator of progress. On the other hand, any assessment based on average well-being is bound to ignore its distribution across the population. Our evaluation of the advancements in, say, the prevention of avoidable morbidity depends however on whether it is spread across the whole population or is instead concentrated among few wealthy individuals – even allowing for the difficulty to form ethical judgements about health inequalities stressed by Deaton (2011).

Multidimensionality and distribution are the two keywords in our attempt to trace the path of the well-being of Italians since the country's unification. We begin with an overview of the historical changes in income per capita, which is still the prime measure of economic development. We rely on a novel series recently estimated in a joint project by the Banca d'Italia, the Italian Central Statistical Office (Istat) and the University of Rome "Tor Vergata" and briefly compare it with the series calculated by Maddison (2001), which is that most frequently used in international historical comparisons. We integrate this description of the evolution of average income with information on its distribution, taking advantage of the new information available in the Italian Household Budget Dataset (Chianese and Vecchi 2011).

Income is a good measure of the command that people have over resources, and it is an important determinant of their standard of living, but it cannot capture all the diverse dimensions of human well-being. This observation is hardly new, although it has recently gained momentum thanks to the work of the European Commission (2009) and the Commission appointed by the French President Nicholas Sarkozy (Stiglitz, Sen and Fitoussi 2009). Here, we go beyond GDP by considering the evolution of life expectancy and health outcomes, nutrition and dwellings, educational achievement, working and leisure time over the 150 years since Italy's unification. We first analyse each dimension separately, and we then aggregate some of them into synthetic indices in order to reach definite conclusions where indicators move in a conflicting way.

[1] We thank for useful comments Nicola Amendola, Luisa Minghetti, Gianni Toniolo and participants in the workshop "Italy's International Economic Position, 1861-2011", Perugia, Sadiba 10-11 December 2010. The views expressed here are solely ours; in particular, they do not necessarily reflect those of the Bank of Italy.

This broad set of variables will allow us not only to depict a nuanced view of the human progress of unified Italy. It will allow us to delve into the dynamics of this progress. Was it a smooth unfolding of long-run, mechanical and inescapable tendencies, or was it the outcome of a sequence of episodes (Atkinson 1997), alternating sharp advancements to stasis and, possibly, regressions? Did Italy sail with the international tide or did it succeed to surf the long wave of economic well-being due to the ability of expert skippers (Toniolo 2007)? It is through answering these questions that we can try to shed some lights on possible determinants of the long-run movements of well-being.

2. Material living conditions

2.1 GDP per capita

It would be far-fetched to identify well-being with income, but there is little doubt that command over resources is a fundamental determinant of living standards. As observed by Anand and Sen, "in an indirect way – both as a proxy and as a causal antecedent – the income of a person can tell us a good deal about her ability to do things that she has reason to value. As a crucial means to a number of important ends, income has, thus, much significance even in the accounting of human development" (2000, p. 100). Likewise, at the aggregate level, the total amount of incomes produced or enjoyed in a country, expressed in per capita terms, is a common measure of the prosperity of its population.[2] National accounts offer several aggregate income measures but, owing to data availability, we focus on gross domestic product (GDP).[3] Our reference series is the real GDP recently released as part of the reconstruction of the Italian historical national accounts jointly carried out by the Banca d'Italia, the Istat and the University of Rome "Tor Vergata" (BIU) (Baffigi 2011; Brunetti, Felice and Vecchi 2011). For international comparisons, we take the series elaborated by Maddison in his comparative research project on world economic growth (2001, 2003, 2010) and updated by Conference Board (2011). As shown in Figure 1, in general the two series differ marginally, though somewhat more significantly in the first half of the 20th century.

At the time of unification, the average income of Italians had hardly recovered from the stagnation of the previous three centuries: as estimated by Maddison, in 1861 GDP per capita was only 32 per cent above the level of 1500. For the post-unification years, the BIU series shows that its annual growth rate remained low throughout the 19th century, about 1.0 per cent between 1861 and 1901, and only increased to 1.7 per cent between 1901 and 1913, prior to World War I. The inter-war period saw some slowdown of economic growth, which

[2] The use of national income as a measure of prosperity has become common after World War II, with the elaboration of national accounts. At the beginning of the 20th century, Italian scholars paid less attention to income than wealth, which was estimated either using information on estate duties or taking a direct inventory of assets and liabilities. This literature is surveyed by Zamagni (1980).

[3] Gross national income (GNI), its counterpart net of capital depreciation (NNI), or the household sector disposable income would be better measures, as they refer to the income that residents can spend instead to the income they have produced, but are only available for recent decades. The distinction between GDP and GNI makes little difference between 1970 and 2010, their respective annual per capita growth rates being 9.6 and 9.5 per cent, but it should matter more back in time, when emigration and the inflow of remittances (included in GNI but not in GDP) were high.

however remained on average around 1.5 per cent per year despite the effects of the Great Depression. World War II hit severely Italian productive capacity, as most other European countries, and brought income per capita back to the early 1880s. The rapid post-war recovery, with the 1940 level reached by 1950, paved the way to the "economic miracle" of the 1950s and 1960s, when GDP per capita rose steadily by an average 5.6 per cent per year. The instability of the 1970s, marked by the oil shocks and a tough social conflict, led to a considerable slowdown, but annual income growth remained well above 3 per cent. The slowdown continued and intensified thereafter: GDP per capita rose by 2.4 per cent per year in the 1980s and by 1.5 in the 1990s, and eventually fell by 0.3 per cent per year in the 2000s, dragged down by the Great Recession of 2008-09.

A glance at Figure 1 shows that the growth of average income was fairly slow after unification, and it took about 80 years to GDP per capita to double. After the destructions of World War II, the speed rose considerably, and income doubled once during the 1950s and a second time in the following fifteen years. Qualitatively this historical pattern is not different from that of other advanced countries, but Italy lags behind the top performers. Considering Maddison's estimates as updated by Conference Board (2011), in 2010 the Italian GDP per capita equalled 62 per cent of the US level, just above the ratio for Spain (55 per cent), but well below those of other OECD countries, like Germany (68), France (71), the United Kingdom (73) or Sweden (80). While some changes have occurred in the rank order of countries, most notably the relative decline of the United Kingdom, Italy has overall shared the ups and downs of other countries (Crafts and Toniolo 2008). There is little indication of Italian-specific growth miracles in Figure 2, at least in comparative terms.

2.2 GDP per equivalent person

Dividing aggregate income by the number of persons provides only a rough indication of average living standards. Two people living together do not need an income twice as large as the income they would need were they living alone. Living in a household generate economies of scale in consumption, as certain goods like housing space and heating can be shared. Moreover, needs differ by age, with children and the elderly typically needing less than adults, at least in terms of calorie intake. Thus, for a society like for a household, the demographic structure affects the standard of living achievable with a given income. Over the last 150 years changes in both age structure and average household size have been dramatic. The share of persons younger than 15 years fell from 34 to 14 per cent of the total population between the end of 1861 and the end of 2009, whereas the share of people older than 64 quintupled from 4 to 20 per cent (Figure 3). The "ageing index", calculated as the number of persons 65 years old or over per hundred persons aged 14 or less, has increased by a factor of twelve between 1861 and 2010 (from 12 to 144 per cent), "making [Italy] the world's "oldest" major country" at the onset of the third millennium (Kinsella and Phillips 2005, p. 7). Household size decreased from 4.5 persons per unit in 1881 to 2.4 in 2010 (Figure 4).

To account for these demographic trends, we apply an "equivalence scale" and compute the number of "equivalent persons", i.e. individuals who are made comparable in terms of needs (e.g. Coulter, Cowell and Jenkins 1992). Unfortunately, we do not have the household-level information that would allow us to make these adjustments simultaneously. Thus, we carry out two separate calculations for age and household size. First, we compute

the number of equivalent adults by weighting all individuals by their relative nutritional needs: $EA_t=\Sigma_a w_a m_{at}$, where m_{at} is the number of persons in the age class a in year t and w_a is the cost of the dietary requirements for a person in the age class a as a ratio to the same cost for an adult in the age class 18-59.[4] Second, we adjust for household size and calculate the number of equivalent persons living alone: $EP_t=\Sigma_h h^{1-\theta} n_{ht},$, where n_{ht} is the number of households with h members in year t and θ measures economies of scale in consumption. When θ equals 0, there are no economies of scales and EP_t equals the total population; when θ is greater than 0, the number of equivalent persons is below the actual number of persons, as the weight of co-residents is scaled down by a factor corresponding to the savings in consumption implied by living together relative to living alone. We take θ equal to ½, a value often used in income distribution analysis (e.g. Atkinson, Rainwater and Smeeding 1995).

GDP per equivalent person exceeds GDP per capita in either versions (Figure 4). When we adjust for the age structure, this happens because children and the elderly are weighted less than adults. Despite the remarkable changes in the demographic pyramid shown in Figure 3, the difference between GDP per capita and GDP per equivalent adult is very small; it only widens slightly in the last decades, but not in a way sufficient to alter the overall income profile. The effects are far more evident when we consider the secular reduction in the household size. The gains from pooling and sharing goods and services within the household, which explain the difference between equivalised and non-equivalised GDP, diminish over time, since the 1920s. Thus, the eleven-fold increase of GDP per capita between 1881 and 2010 would turn into an eight-fold rise of GDP per equivalent person. This observation should not be overplayed. First, at earlier stages of development, expenditure is higher on goods characterized by low economies of scale like food than on those characterized by greater economies of scale like housing (Deaton 1997). This would lead to assume that θ rises over time, so that the discrepancy between equivalised and non-equivalised GDP would be proportionally lower at the beginning than at the end of the period, muting and possibly reversing the impact on the growth rate. Second, and more importantly, the secular movements towards a smaller household size reflects, by and large, a people's choice. Thus, the lower economies of scale in consumption must have been more than offset, in welfare terms, by the greater independence allowed by living in small family units. Exit from the family of origin and household formation reflect cultural factors (Reher 1998, Giuliano 2007), but crucially depends also on economic feasibility, as confirmed by the "doubling-up" of US households since the Great Recession of 2008-09 (DeNavas-Walt, Proctor and Smith 2011). The fall in household size is an important feature of the evolution of quality of life in Italy, as in other advanced countries, and its welfare implications are not easily captured by a mechanical application of equivalence scales.

[4] The valuation of the cost of dietary requirements by age utilises the estimations carried out to construct the absolute poverty line and refers to prices prevailing in 2005 (Istat 2009, Table 3.10, p. 39). For instance, the relative weights are 0.62 for children younger than 5 years, 0.86 for children aged 5 to 9 years, and 0.82 for individuals older than 74.

2.3 Worked time

As early as in 1952, Kuznets denounced that the long-run reduction in hours worked, that is, the secular increase in the consumption of leisure, was one of those aspects that economists had "… overlooked, or, if recognized, dismissed lightly because they lie outside the boundaries of economic discipline, as narrowly defined. The neglect or dismissal of these problems is likely to be more detrimental to the understanding of the process of economic growth than even crude attempts to deal with them" (1952, pp. 63-64). In the same vein, Nordhaus and Tobin later remarked that "the omission of leisure and of nonmarket productive activity from measures of production conveys the impression that economists are blindly materialistic. Economic theory teaches that welfare could rise, even while NNP [net national product] falls, as the result of voluntary choices to work for pay fewer hours per week, weeks per year, years per lifetime" (1972, p. 9). Nordhaus and Tobin suggested a three-step procedure to adjust GDP not only for leisure and home production, but also to impute services of consumer durable goods and to exclude components constituting investment rather than consumption, and to correct for negative externalities associated with urbanization.

The reduction in worked hours may take many dimensions: later entry in the labour market, as years spent in full-time education rise; shorter working days or weeks; longer holiday leaves; early retirement, relative to residual life expectancy. Together with the rise in the length of life, all these changes have gone in the direction of reducing the share of lifetime devoted to work, diminishing effort and increasing leisure. We do not have enough data to carry out a systematic adjustment of GDP for the reduction in worked hours along the lines suggested by Kuznets, Nordhaus and Tobin, but we can examine two relevant aspects: child labour and working hours.

Available evidence suggests that child work was widespread in most European countries during the 18th and 19th centuries (Cunningham and Viazzo 1996). According to Toniolo and Vecchi (2007) and Cinnirella, Toniolo and Vecchi (2011), Italy was no exception, with about 80 per cent of children aged 10 to 14 years being classified as economically active at the time of the country's unification (Figure 5). Industrialization was however accompanied by a decline in child work, unlike in many other countries.[5] This decline proceeded rapidly throughout the whole period, except for a stasis between the two world wars, and even an increase in the aftermath of the Great Depression (1931-36). These estimates, which are based on census results, contradict the pessimist conclusion of the Parliamentary Commission of Inquiry into Unemployment that "... in the course of Italy's economic development, the employment of children in workplaces has steadily increased during its early phases" (Spesso 1953, p. 171). They are also considerably lower than the figures reported in some international comparisons of child work (ILO 1996; Basu 1999).

It is not easy to reconstruct the historical movements in working time, not least for the large variability across sectors and occupations. The selection of data reported in Figure 6 mostly refers to manual workers in industry, including construction. From 1870 to 1913, Huberman (2004) estimates a virtual stability on the basis of cross-national data on factory

[5] See, among others, De Herdt (1996) and Puissant (1976) for Belgium, Goldin and Sokoloff (1982) for the US, Horrel and Humphries (1995) and Tuttle (1998) for the UK.

conditions gathered by the U.S. Department of Labor (1900) from official sources.[6] Time spent at work did not vary much during Liberal Italy, so that the gains in well-being as measured by the GDP per capita were not offset by a concomitant increase in the effort required to produce it. The calculations by Zamagni (1975, 1994) show a temporary rise of work-time during World War I, followed by a sharp fall around 1919, when the 8-hours per day, or 48-hours per week, were adopted. Further reductions followed until the outbreak of World War II. As noted by Zamagni (1975), Mussolini introduced a number of exceptions (e.g. in 1926 employers were allowed to raise the limit from 8 to 9 hours per day), but their overall effect was short-lived and small in size. According to the survey of industrial establishments carried out by Ministero del Lavoro and Istat's business survey, working time slightly rose in the aftermath of World War II, stabilised during the 1950s, and then declined until early 1980s. Thereafter, Istat's national accounts figures for all employees, rather than blue-collars only, indicate a flat trend, except for the abrupt drop during the Great Recession of 2008-09. The Conference Board's (2011) series for the total economy, which consistently extends Istat's national account series back to 1950, exhibits a substantially similar pattern, but at a higher level because it also covers the self-employed, who typically work longer hours. Nowadays, the average employed works more in Italy than in the United States, or in the United Kingdom, France, or Germany.[7]

When we consider the work effort relative to the whole population rather than the employed only, we may expect to observe similar long-run tendencies, but reinforced by the evolution of labour market participation at different ages. Both the reduction in child labour and the ageing of population, when not accompanied by a corresponding elevation of retirement age, would imply an additional fall in hours of work per person, besides that due to shorter work-time. Indeed, Kuznets (1966, p. 75) calculates a significant long-run decrease in the number of man-hours per capita (as opposed to per worker) in thirteen advanced economies, ranging from 1.1 per cent per decade in Great Britain (1870-1952) to 4.5 per cent in the Netherlands (1900-1952), and to an "exceptional" 7.5 per cent in Italy (1901-1953). According to the Conference Board's (2011) data, the fall continued until the 1970s; it was then reversed in the mid-1990s, as labour market participation begun rising again. The post-war trend in hours of work is in Italy similar to those of the other main European countries, although somewhat less pronounced. It is a popular view that Europeans work less than Americans, owing to higher tax rates (Prescott 2004), the role of unions and labour market regulations (Alesina, Glaeser and Sacerdote 2006), or sheer preferences for leisure rather than income (Blanchard 2004; for a survey, see Gordon 2010). Huberman and Minns (2007) contend that this work-time divergence is a long-run phenomenon. Yet, this view does not appear to fit well the Italian data. Taking the United States as the benchmark, it is true that since 1960 hours of work dropped more rapidly in Italy than in the United States, but their average level remains above the US level when expressed per worker, and is only slightly below when expressed per capita (Figure 7).

[6] We prefer Huberman's figures to those estimated by Maddison (1964), because the latter depend on many untested assumptions, such as taking hours of work per week in Italy to be the same as in Great Britain (see Huberman 2004, pp. 967-8).

[7] The evidence provided by Ausubel and Grüber (1995) suggests that Italy's historical record follows, by and large, the pattern of most European countries.

2.4 Summing up

The average income of Italians increased 13 times since unification, somewhat less if we take into account the diseconomies in consumption due to the fall in household size, somewhat more if we consider the lower effort (and higher leisure) brought about by the fall in hours of work. It is a substantial growth, which has allowed Italians to improve considerably their material standards of living, but one no more spectacular than that experienced by most other European countries or Western Offshoots.

3. Beyond average incomes

GDP per person ignores the distribution of income across people. However, the welfare of a community arguably depends not only on total income, but also on the way in which it is distributed among its members. As put by Dalton (1920, p. 349), "the objection to great inequality of incomes is the resulting loss of potential economic welfare". In Dalton's utilitarian approach, social welfare equals the sum (or mean) across individuals of identical concave utility functions, where income is the argument. Social welfare is maximised when income is equally distributed, and inequality can be identified with the shortfall from this maximum value. Following Atkinson (1970), we can measure this welfare loss in the income space by means of the "equally-distributed equivalent income", that is the level of income *YE* which would give the same level of social welfare as the given distribution when equally assigned to all individuals. By construction, *YE* is lower than mean income μ, and inequality can be measured by the index $A=1-YE/\mu$. By inverting this expression, we see that $YE=\mu(1-A)$ is an evaluation of the standard of living allowed by income level μ after adjusting for the distribution of income among people.[8] Alternatively, distributional judgements can be made "an integral part of real income evaluation" (Sen 1976, p. 20) by adopting the axiomatic approach proposed by Sen, which leads to the measure of economic welfare $W=\mu(1-G)$, where *G* is the Gini index.[9] Despite the different theoretical bases, *YE* and *W* have the same structure and only differ for the inequality index.

In this Section, we investigate the secular changes in the distribution of income and assess how the dynamics of GDP per capita differ from its distributionally-adjusted value. Before doing that, we summarise a novel database used in this assessment.

3.1 Data problems and the Italian Household Budget Dataset

Ever since scholars turned their attention to the estimation of long-run changes in the personal distribution of income, the lack of suitable data has represented a major obstacle. Modern household surveys began after World War II, once the statistical theory and method to construct representative samples had been developed and legislators had created national

[8] The value *YE* is obtained by assuming a specific shape of the individual function of income which enters the social welfare function. As stressed by Atkinson (1983, p. 5) this individual function need not be interpreted as utility, since social welfare is defined on income. If we take an iso-elastic function, we have $YE=[\Sigma_i y_i^{(1-\varepsilon)}/n]^{1/(1-\varepsilon)}$ for $\varepsilon>0$ and $\varepsilon\neq1$ and $YE=\Pi_i y_i^{1/n}$ for $\varepsilon=1$, where the sub-index *i* refers to individuals and ε is a free parameter capturing the aversion to inequality (see below).

[9] Dagum (1990) suggests the alternative formulation $W=\mu(1-G)/(1+G)$, which is somewhat more sensitive to the level of inequality.

statistical offices (Stapleford 2009). Prior to World War II, data at the individual or household level required to estimate the evolution of the personal distribution of income are scarce and inadequate (Stigler 1954; Deaton 1997).

The major drawback of early data is their limited coverage, either of the population or of the income concept (Deaton and Zaidi 2002). This problem characterises income data drawn from tax files since Pareto's (1895) pioneering study of the revenue curve. Their representativeness is improved by the adjustment to income and population totals derived from external sources, pioneered by Kuznets (1953) and recently revived by Atkinson, Piketty and co-authors (Atkinson and Piketty, eds., 2007 and 2010). In this literature, however, inequality can only be measured by the income shares of top income earners. The statistical material is also limited and fragmented in the analysis of the long-run evolution of inequality in the United States (Williamson and Lindert 1980) and the United Kingdom (Williamson 1985), despite the many sources employed. Other investigators have searched for an alternative to household budgets and income data exploring a number of indirect indicators, ranging from heights (Moradi and Baten 2005) to the construction of "social tables" (Milanovic 2006; Milanovic, Lindert and Williamson 2010).[10] Despite the eclecticism and the ingenuity of approaches, the paucity of suitable data has prevented the analysis of long-run change of income inequality.

For Italy, however, we can rely on a novel and innovative database. Data on household budgets have been collected in thousands, in various forms, from the unification till the early 1960s (Niceforo 1933; Somogyi 1959; Vecchi 1994), when the modern surveys run by the Istat and the Bank of Italy became systematic. A first collection of about 4,700 household budgets over the years 1881-1961 led to the Italian Household Budget Database (IHBD-I), which was employed by Rossi, Toniolo and Vecchi (2001) to produce long-run statistics on expenditure inequality. Here, we use the income data of the new version of the dataset, IHBD-II, which includes around 20,000 household budgets, as described by Chianese and Vecchi (2011). These data are used to construct "samples" centred around census years. Census data provide the information needed to compute the weights ("expansion factors") used to post-stratify the income information and correct for the potential biases arising from the lack of a probabilistic survey design (Holt and Smith 1979; Little 1993).[11] The IHBD-II data cover the period 1861-1931; subsequently, we use the data collected by Istituto Doxa (Doxa) for 1948, and from the Bank of Italy in its Survey of Household Income and Wealth (SHIW) from 1967 onwards (tabulated data until 1976 and microdata thereafter; on the latter sources, see Brandolini 1999).

Summary information on our household-level data are reported in Table 1. The comparison with GDP per capita figures shows systematic source-related discrepancies, but, all in all, the dynamics of the two series appear to be sufficiently close. Table 1 also reports the Gini index and the Atkinson index for the distribution of per capita incomes over the

[10] See also Lindert (2000), Williamson (2002) and Brenner, Kaelble and Thomas, eds (1991). The rationale of some of these indicators, on both theoretical and empirical grounds, is discussed by Engerman (1997).

[11] The weights are the population shares resulting from the breakdown by area of residence (North-West, North-East, Centre, South and Islands) and sector of occupation of the breadwinner (agriculture, industry and services).

period 1861-2008. Distributive statistics were estimated by fitting, for each available year, a four-parameter functional form, the Generalized Beta of the Second Kind (GB2) discussed by Jenkins (2009).[12]

3.2 Long-run dynamics of inequality and distributionally-adjusted GDP per capita

Figure 8 shows the secular trend of income inequality in Italy, as measured by the Gini and the Atkinson index.[13] The latter requires the specification of the parameter ε that measures the aversion to inequality: the higher ε, the more weight we attach to transfers at the bottom of the distribution relative to transfers at the top; in the extreme case where ε tends to infinity, only the income of the poorest individual would matter. We consider three values of ε, 0.125, 1 and 2), which should cover a wide range of social preferences. There are local divergences in the movements of the four indices, in particular between the Atkinson index most sensitive to changes at the bottom of the distribution (ε=2) and the others. However, except for a notable divergence in the period 1921-1931, the overall story appears to be fairly consistent across the four indices. (This is true also of the Atkinson index with ε=0.125, whose variations are dwarfed by the common scale.)

During the first seventy years since unification the Gini index has been fluctuating within a relatively narrow band, between 45 and 50 per cent. Eighty years later, it has decreased by 12-18 percentage points to around 33 per cent, although the historical minimum was reached, at about 30 per cent, in the early 1980s. Even allowing for statistical errors, the long-run trend is unambiguously downwards: Italy's modern economic growth has been accompanied by a narrowing of the distribution of income. This process has not been linear, however, and it is better described as a sequence of periods alternating gentle declines to stasis or sharp drops to sudden rises, consistently with Atkinson's (1997, p. 303) observation that "... it is misleading to talk of 'trends' when describing the postwar evolution of the income distribution", whilst "... it may be better ... to think in terms of 'episodes' when inequality fell or increased".

During the early stages of industrialisation the Gini index stalled. The increase between 1871 and 1901 is not negligible, although probably not statistically significant, and is by and large offset by the reduction between 1901 and 1921. There is no evidence of the inverted-U shaped curve that Kuznets (1955) suggested should emerge along the process of industrialisation. Rather, the evidence seems consistent with the hypothesis of a "benign industrialization" conjectured by Toniolo (2003) and Vecchi (2003). In this respect, Italy's experience appears to differ from those of the United States and the United Kingdom. According to Lindert (2000), "income and wealth inequality definitely rose over the first 150 years of US history. Britain may also have had an early period of rising inequality, but the

[12] The parametric estimation, by maximum likelihood, was chosen to minimize the impact of differences in sources and to mitigate the influence of irregularities, especially for the 19th century data. In addition to providing statistical robustness, the GB2 function allowed us to deal with grouped data (Doxa and early SHIW). Parametric and non-parametric estimates are instead virtually identical when using microdata. See Amendola, Brandolini and Vecchi (2011) for further details.

[13] For an analysis of changes in quintile income shares, see Amendola, Brandolini e Vecchi (2011, pp. 254-7).

most likely period of rising inequality (1740-1810) was earlier than most writers have imagined" (Lindert 2000, p. 169).

While income distribution tended to narrow during the two episodes of more intense economic growth, the Giolitti's years prior to World War I and the post World War II years of the so called "economic miracle", it was between the end of the 1960s and the early 1980s that the fall in inequality was more pronounced, with a sharp drop of the Gini index by more than 10 percentage points. This fall was driven by a strong compression in the distribution of labour incomes, which was reinforced by the expansion of the welfare state (Amendola, Brandolini and Vecchi 2011). This "egalitarian phase" was not specific to Italy: changes in the same direction, if not of the same size, took place for instance in France, Germany, Sweden and Finland (Brandolini and Smeeding 2008).

The downward trend reversed since the early 1980s. In particular, inequality rose during the severe economic and currency crises of the early 1990s, when the Gini index abruptly went back to the levels of the late 1970s.[14] This recent trend is however less pronounced than in other countries, particularly the United States and the United Kingdom (Brandolini and Smeeding 2008).

The fall in inequality amplifies the extent of the economic progress of Italians since unification. As shown in Figure 9, the overall increase of economic welfare is always larger for the distributionally-adjusted measures of real income. The improvement is modest when we take Atkinson's equally-distributed equivalent income with ε equal to 0.125, which is not surprising in the light of the modest weight assigned to inequality in the social welfare function. For higher values of ε or for the Gini index, the increase of the distributionally-adjusted GDP per capita is far more conspicuous. Sen's measure, embodying the Gini index, suggests an 18-fold increase of economic welfare between 1861 and 2008 instead of the 13-fold rise indicated by GDP per capita.

Whereas the overall tendency appears to be sufficiently robust, its exact size and the movements within sub-periods are somewhat more uncertain. With this caveat in mind, in Figure 10 we compare the annual growth rates in five sub-periods of GDP per capita, both unadjusted and adjusted for either the Gini index or the Atkinson index with ε equal to 2 (which magnifies the sensitiveness to the bottom of the distribution). In the first half a century since unification, differences among the three measures are small, owing to the modest changes of the income distribution. During the next period, encompassing the two World Wars, the growth of economic well-being is stronger after accounting for distribution. The growth in the two decades following World War II is dominated by the dynamics of GDP per capita. While the Gini-adjusted measure indicates an even faster growth, the Atkinson-adjusted measure points however in the opposite direction: this seems to suggest that the entire income distribution became less unequal during the years of the "economic miracle" thanks to the gains of the middle class, while the bottom of the distribution lost

[14] Available information does not yet allow us to assess changes during the Great Recession of 2008-09. According to simulations by Brandolini, D'Amuri and Faiella (2011), there was some widening of the income distribution, but of a relatively modest size. Combined with the low economic growth, the upward trend in inequality of the past two decades has brought about a deterioration of vulnerability and absolute poverty indicators (Amendola, Salsano and Vecchi 2011; Rossi and Vecchi 2011).

grounds. The effect is small, but the evaluation of that period depends on social preferences. Distributive changes partly compensated the slow-down of economic growth during the 1970s and 1980s, but then augmented the further slow-down recorded since the early 1990s.

3.3 Summing up

Italy's modern economic growth has been accompanied by a noticeable narrowing of the distribution of income. Hence, distributionally-adjusted GDP per capita appears to have increased more rapidly than the unadjusted series. The extent of the extra growth of economic welfare attributable to falling inequality depends on the shape of social preferences. Since the early 1990s, the widening of the income distribution has further depressed an already decelerating growth rate.

4. Life expectancy and GDP-augmented measures

We mentioned at the beginning the enormous advancement in the Italians' life expectancy. Two questions arise naturally. Did this advancement proceed at a speed and with a timing similar to those of material living conditions? How can we combine the improvements in both dimensions to arrive at a comprehensive evaluation of the progress in well-being? One way to answer the second question is to construct a measure of GDP per capita adjusted for life expectancy, as suggested by Usher (1973); a second way is that followed in the construction of the Human Development Index. Before considering these alternatives, we turn to the first question and describe the evolution of health conditions in Italy since unification (see also Atella, Francisci and Vecchi 2011).

4.1 Life expectancy at birth, infant mortality and male heights

The increase of life expectancy at birth in Italy stands out in the international comparison (Figure 11). In the liberal period, from 1861 to 1913, the advancement is rapid and sizeable, and Italy almost catches up with France. Changes are in line with those in other countries during the fascist period, but after World War II they are more substantial than elsewhere, and Italy overtakes most countries. According to the last international estimates, Italians can expect to live longer than any other world citizen except for the Japanese (World Health Organisation 2011). The rise in life expectancy shows conspicuous differences between sexes. Towards the end of the 19th century, there was virtually no difference between males and females. Life expectancy then begun to improve faster for women than for men: the gap widened to almost 7 years in about a century, before starting to close again in the 1990s. This time pattern is common to other countries, although sex differences are no longer the least pronounced among the countries considered (Figure 12).

The improvement in life expectancy is largely explained by that in infant mortality.[15] In Figure 13 we compare the long-run series for Italy of the infant mortality rate, defined as the number of deaths within the first year of life per 1,000 live births, with those for other countries using the data assembled by Mitchell (2008). In 1863, this rate equalled 290 in

[15] Infant mortality is a good indicator of a country's level of development. It is included by Morris (1979) in the calculation of the Physical Quality of Life Index (PQLI), a progenitor of many composite indices of well-being. The estimates of the PQLI by Federico and Toniolo (1991) show that Italy in 1910 lagged behind the United Kingdom, France and Belgium by about 40 years.

Italy, slightly less than in Germany, but considerably more than in France and England and Wales, despite the higher income level of latter countries. Infant mortality fell quickly after the unification, mainly thanks to the reduction in mortality due to infectious diseases, but in 1910 it was still above the levels that we observe today in the poorest countries of the world, like Sierra Leone, Liberia or Angola. The infrastructure of public health was still underdeveloped at the end of the 19th century, and this is likely to have prevented Italy from absorbing more rapidly the excess mortality, especially among the youngest cohorts: the deaths caused by diarrhoea and enteritis – negatively correlated with the presence of public health facilities – were considerably higher in Italy than in other countries (Caselli 1991). The convergence towards the French and British values slowed down during world wars, and in the mid-1970s the infant mortality rate still exceeded those of other richer countries. However, in 2008 it has fallen to 3.3, a value slightly higher than in Japan, Sweden or Finland (around 2.5), but lower than in France (3.6), Germany (3.5), Australia (4.3), United Kingdom (4.7), and the United States (6.7) (University of California Berkeley and Max Planck Institute for Demographic Research 2010). Until recently, however, infant mortality has been persistently higher for out-of-the-wedlock births, which may be seen as evidence of the less adequate health conditions of poorer classes, where these births are more common (Manfredini and Pozzi 2004; Tizzano 1965; Toniolo and Vecchi 2010).

Data on people's height can offer further insights into the well-being of a population, particularly in periods for which we lack more informative sources (e.g. Fogel, Engerman and Trussel 1982). Though the variation of individual heights is dominated by randomly distributed genetic potential, variations over time or across socioeconomic groups are driven by systematic differences in diet, disease environment, workload, and health care. To the extent that these are functions of real income, mean heights provide indirect clues about living conditions.[16] According to the statistical reconstruction by A'Hearn and Vecchi (2011), the average male height steadily grew by almost a centimetre per decade between the cohort born in 1861 and the cohort born in 1980. The gain is roughly in line with the experience of other European countries.[17] Interestingly, Italy does not appear to have experienced any period of declining heights such as those which are typically associated with the disamenities of industrialisation in the United Kingdom and the United States (Williamson 1981; Komlos 1998; Steckel 2008). A'Hearn and Vecchi (2011) confirm that the national-level evidence extends to the north-western regions where industrialization was most intense (Piedmont, Lombardy and Liguria).

[16] Data on heights typically come from administrative military records, which suffer from various comparability problems (e.g. varying age at measurement, rounding and heaping, selection due to recruitment procedures, truncation due to minimum height requirements). Arcaleni (1998, 2006) provides a detailed account of the procedure by which conscripts were measured as they turned 20 and underwent the physical examinations to ascertain fitness for military service. With the end of conscription in 2005, this information is unavailable for people born after 1980. Heights of Italian conscripts have been also studied by Costanzo (1948), Terrenato and Ulizzi (1983), Federico (2003), A'Hearn (2003, 2006) and A'Hearn, Peracchi and Vecchi (2009).

[17] According to Hatton and Bray (2010), from the 1870s to the 1970s average height increased by more than 1 centimetre per decade in a group of 15 Western European countries. The rise in Italy was estimated at 1.07 centimetres per decade, against less than 1 in Ireland, France and the United Kingdom, but 1.2 or more in Spain, Germany and the Netherlands.

4.2 GDP per capita adjusted for life expectancy

As noted by Usher, "if you ask a man whether he prefers economic conditions as they are today to those of fifty or a hundred years ago, he would probably answer that he prefers conditions as they are today, and his preference might have less to do with the material things we possess than with the fact that we live longer" (1973, pp. 193-94). Building on this consideration, Usher (1973, 1980) proposed a method to correct GDP per capita for longevity to obtain a better measure of well-being. He derived the measure $LEA_t=GDP_t(L_t/L_0)^{1/\beta}$, where L_t is the average life expectancy taken across all ages j weighted by their population shares p_{j0} in the base year 0: $L_t=\Sigma_j p_{j0}L_{jt}$. The j-specific life expectancy in year t is defined as $L_{jt}=\Sigma_{i=j,\ldots,110}[\Pi_{k=j,\ldots,i-1}(1-D_{kt})(1-D_{it}/2)]/(1+r)^{i-j}$, where D_{it} is the mortality rate at age i in year t and r is the subjective discount rate. The parameter β is the elasticity of annual utility with respect to consumption: the higher β, the lower the weight assigned to life expectancy. Indeed, the growth rate of LEA_t equals that of GDP per capita plus 1/β times the growth rate of life expectancy. Note that "Usher's model offers what appears to be an upper bound on the growth in 'true' living standards accruing for mortality decline" (Williamson 1984, p. 162), as improvements in life expectancy are unrealistically taken to be completely exogenous and independent of income growth.

This method is data intensive, as it requires yearly life tables for the entire population. We compute the annual series for LEA_t for Italy from 1872 to 2008 using the Istat life tables as assembled in the Human Mortality Database (University of California Berkeley and Max Planck Institute for Demographic Research 2010). We take r=0.05 and the same three values of β (0.25, 0.3 and 0.45) considered by Usher (1973), Williamson (1984) and Costa and Steckel (1997). As shown in Figure 14, by allowing for the increasingly longer lives of Italians, the estimated progress in well-being rises considerably relative to considering solely GDP per capita. The extent of the progress depends, however, on the value of β: from 1873 to 2008, GDP adjusted for life expectancy rose 40 times when β is set equal to 0.25 but only 24 times when β is equal to 0.45 (13 times for GDP per capita). Whatever the value assigned to β, the consequences of embodying the gains in longevity in our evaluation are stronger during liberal Italy, due to the faster improvement in life expectancy: between 1873 and 1913, LEA_t grew by 2.3 per cent per year against 1.1 per cent of GDP per capita, taking β=0.25.[18] The increase in life expectancy contributes less to overall growth during fascism and after World War II.

4.3 Summing up

Life expectancy has increased rapidly since Italy's unification, at a faster pace than in most other advanced countries. This result was achieved despite some lag in decreasing infant mortality. The progress in well-being appears to be far more sizeable when economic growth is combined with the improvement in health conditions.

[18] For the first decades after unification, our estimates are more positive than those obtained by Crafts (1997). See also Huberman (2004) and Crafts and Toniolo (2008) for other applications to few benchmark years.

5. Educational achievements and the Human Development Index

Education is a third important dimension of human well-being. School qualification has its own place as an important determinant of social status, but we mainly regard it as a proxy of the capacity of persons to function, to comprehend and operate in the outside environment to do the things they value. A way to account for the education together with income and life expectancy is to compute the secular series of the Human Development Index (HDI). The HDI is probably the single most popular composite index in the field of development economics. Since its introduction in 1990 (UNDP 1990), practitioners as well as scholars have been fascinated by the possibility of capturing the many dimensions of well-being into a single index easily comprehensible to the general public. This "eye-catching property", as labelled by Streeten (1994), has been crucial for the HDI to successfully challenge per capita income as the sole measure of development. In this section, we first describe the educational achievements of Italians and then examine the secular evolution of the HDI.

5.1 Education and child labour

Italy's current record in educational achievement is rather poor, be it measured by school attainment levels or by proficiency scores in surveys such as PISA or TIMMS. According to Morrisson and Murtin (2009), the situation was not too different in 1870, when Italy stood out as a laggard among most other comparable countries: with less than one year of schooling, Italians were far away from the achievements of the leaders – US (5.6 years), Germany (5.5), France and UK (4) – but also from those many backward countries – Spain (2.4), Japan (1.7) and Greece (1.5).[19] This is picture consistent not only with many studies in the literature (Zamagni 1993; Checchi 1997), but also with the testimony of contemporary commentators. Of particular interest is the appraisal by the historian Bolton King and his collaborator Thomas Okey – authors of *Italy Today* published in 1901: "Education is the gloomiest chapter in Italian social history, a chapter of painful advance, of national indifference to a primary need, of a present backwardness, that gives Italy (next to Portugal) the sad primacy of illiteracy in Western Europe" (King and Okey 1901, p. 233). These were not words by two (of the many) foreigners eager to write travel memories even if the absence of any understanding of the Italian matters, but rather a qualified opinion: Bolton King was an educational administrator and historian very acquainted with the Italian society. Moreover, in writing *Italy Today* King and Okey benefited from the consultation with a large number of eminent figures. The list includes Luigi Bodio (Head of the Statistical Office), Luigi Einaudi and Antonio de Viti de Marco (economists), in addition to a crowd of members of the Parliament ("onorevoli") (Giustino Fortunato, Filippo Turati and Leonida Bissolati to quote only a few), academic scholars (e.g. Cesare Lombroso, Francesco Nitti and Pasquale Villari), journalists, nobles (e.g. the Countess Pasolini), bankers, and many other experts in various fields.

Italy's secular performance can be better appreciated by comparing the new estimates of the gross enrolment rate (GER) for primary education made available by A'Hearn, Auria and Vecchi (2011) with those by Lindert (2007). Figure 15 shows the trend over the years

[19] The data refer to the population aged between 15 and 64.

1860-1930 of the GERs for selected countries. Italy's position is pretty stable at the bottom of ranking, outperformed even by Greece – a country with a GDP per capita about a half of that of Italy' in 1860 – that succeeds in catching up with Italy and eventually overcoming it. Nor did Italy catch up with Spain, despite its higher level of GDP per capita. King and Okey had little hesitation in identifying the causes of Italy's poor record: "There have been thirty-three Education Ministers since 1860, each eager to distinguish himself by upsetting his predecessor's work. Money has been stinted, and State and communes, lavish in all else, have economized in the most fruitful of national investments." (p. 233). Despite the Casati law was in place from the first day of the Kingdom of Italy, it seems it remained a dead-letter. "Prosecutions for non-attendance are probably unknown, and a head-inspector reports that he has never heard of one". (p. 235).

The evidence on literacy rates is fully in agreement with the picture outlined by the GERs: at the time of unification Italy's illiteracy rates were as high as nearly 80 per cent (with a gender gap of circa 14 per cent in favour of males) and it took a surprisingly long time for Italy to catch up with other countries. According the 2001 population census, illiteracy has been eradicated from the country, even though many observers are drawing attention to other forms of illiteracy, more appropriate to the present day.

The explanatory power of enrolment rates is weakened by the fact that part of enrolled pupils are not attending school. The lack of a long-run time series on attendance rates prevents us from estimating the gap between the two series. The evidence gathered by A'Hearn, Auria and Vecchi (2011) suggests that approximately 20 per cent of enrolled pupils did not attend school at the end of the 19th century, with a gender gap equal to 5 per cent (in favour of males). While the literature tends to emphasize the role played by the *comuni*, in particular to their inability to provide education services due to lack of resources, preliminary elaborations on the reports by ministerial inspectors suggest that an important role was played by their inertia or "lack of incentives". This holds particularly in the Southern regions, while in the Centre-North it seems that the obstacles of the territory (lack of infrastructure and climatic conditions) were the single most important impediment to school attendance.

5.2 Human Development Index

In 1979 Morris David Morris wrote a book in which he introduced a new composite index of human development – the Physical Quality of Life Index (PQLI) – computed by combining three social indicators, literacy, infant mortality and life expectancy. By now it is clear that Morris' book was an influential one. His effort to capture the multidimensionality of human development by aggregating multiple elementary socio-economic indicators into a scalar measure prompted an industry-wide investigation of alternative composite indices (Ravallion 2010). The most popular one is probably the Human Development Index (HDI), which was launched in 1990 in the UNDP's Human Development Report. Since then, the HDI has been the centrepiece of the HDRs for 21 years, and the latest edition includes HDI rankings for 169 countries (Stanton 2007).

The HDI measures the average achievement in human developments in a country by taking a simple unweighted mean of three indicators: the logarithm of income per capita LY, life expectancy at birth L, and education E. Income is taken in logarithms "… in order to reflect diminishing returns to transforming income into human capabilities" (Anand and Sen

1994, p. 10); until 2010 it was measured by GDP, but it is now measured by GNI. The indicator for education is itself a composite index. Prior to 2010 it combined adult literacy with a two-third weight, and gross enrolment in primary, secondary and tertiary schools, with a one-third weight. Since 2010, it combines, with equal weights, the mean years of schooling and the expected years of schooling, i.e. the "number of years of schooling that a child of school entrance age can expect to receive if prevailing patterns of age-specific enrolment rates were to stay the same throughout the child's life" (UNDP 2010, p. 223). Elementary indices are normalised by taking the proportional country's achievement over a prefixed scale.

The new HDI introduced in 2010 is based on the geometric mean of the elementary indicators, while the old HDI used an arithmetic mean. Owing to this change, which has removed the assumption of perfect substitutability, the new HDI tends to penalise unbalanced development in the various dimensions. More formally, the old formula is $HDI=(L^*+E^*+LY^*)/3$, while the new formula is $HDI=(L^*E^*LY^*)^{1/3}$, where L^*, E^* and LY^* are the normalised values calculated by taking the difference between the actual value and the minimum value as a ratio of the difference between maximum and minimum values. In either formulations, HDI varies between 0 and 1. In the revision also maximum and minimum values were partly revised. According to UNDP's estimates, in 2010 Italy ranked 23 in a list comprising 169 countries (below than many other European countries – even below Spain and Greece – but better than the UK, Austria and Portugal). Italy's position in the international ranking has barely changed during the previous 30 years.[20]

Economic historians have practiced the art of HDI-making quite extensively. With regard to Italy, contributions include Crafts (1997), Conte, della Torre and Vasta (2007), Felice (2007) and Prados de la Escosura (2010).[21] In this chapter, we have exploited new data recently made available by Vecchi (2011) to construct the HDI series for the entire 150-year period (Figure 16). All in all, the new series does not add much to what we knew from previous estimates. Human development unfolds over time following an approximately linear path, disrupted by the two world wars, and dented by episodes in which the HDI pace slows down (e.g. during the interwar years) or accelerates (e.g. post-WWII recovery). If we use, as the UNDP does, the values of 0.5 and 0.8, as cut-off values for categorizing countries of "low", "medium" and "high" human development, we come up with a clear periodization for the 150 years since unification. Italy succeeds in escaping the low human development area only in the early 1930s, while it moves to the high human development area relatively late, in the mid 1980s.[22]

In Figure 17 Italy's long-run performance is compared to that of other countries, a task made possible thanks to the data kindly made available to us by Prados de la Escosura. The

[20] For historical analysis, UNDP (2010) relies on a "hybrid HDI", which feeds the old income and education indicators into the new functional form (1b). This choice is motivated partly with the suitability of old indicators to assess past progress, partly with data availability (Gidwitz et al. 2010).

[21] Federico and Toniolo (1991) pioneered the use of composite indices by estimating the PQLI for Italy and a few other countries.

[22] Wolff, Chong and Auffhammer (2008) warns against the use of such thresholds: they show that data error in aggregate indicators can be devastating.

series shown in Figure 15 are based on the "improved" human development index (IHDI), derived by applying Kakwani's (1993) convex achievement function to the usual dimensions (longevity, education and income) and using a geometric average to combine them into a scalar indicator. Italy's IHDI has been computed by the authors, while the series for the regional aggregates are from Prados de la Escosura (2010). Two facts stand out. First, at the time of unification, Italy's human development gap with the OECD countries (a label used to denote Western Europe and its offshoots plus Japan) was remarkably large, in the order of 50 percent. This implies that the distance between the peripheral Italy and the "core" countries when measured by a composite index is larger than GDP per capita comparisons would suggest. Going beyond the GDP emphasizes Italy's backwardness at the onset of modern economic growth. Second, although Figure 15 clearly identifies Italy's secular convergence, the pace of the process is slow, dramatically slow. Until 1900 the gap between Italy and OECD (as measured by the ratio of the IHDIs) fluctuated around 60 per cent; the gap shrank during the first decade of the 20th century, when it reached 70 percent, but failed to improve during the interwar years. The catching up resumed from the 1960s, but it took another half a century before convergence was fully achieved.

5.3 Summing up

School gross enrolment rates improved over time, but the process was strikingly slow. In addition to the issue of how many pupils were going to school, other indicators suggest that, in the case of Italy, the poor quality of school system might be responsible for this modest performance: literacy rates, especially those of individuals aged 15-19, have increased very slowly, with wide regional disparities. When education indicators are combined with life expectancy and GDP per capita, the resulting Human Development Index identifies a smooth, nearly-linear progress over time.

6. When did it occur that Italians became well-off?

Perusal of the literature reveals that, until recently, GDP has been the main tool to track the well-being of Italians.[23] The Italian historiography has been distinctly GDP-centric. Despite the awareness that GDP can only serve as a proxy for monitoring the change in average living standards, scholars have been happy with the GDP and did not feel the need to look for alternative measures (Vecchi 2003). Why this affection for the GDP? In addition to the usual reasons (most notably, GDP data are easily available), a significant role was probably played by the so-called "trickle-down theorem", that is the idea that GDP growth is the only thing to be concerned with, since some of the increased income will – sooner or later – trickle down from the rich to the poor (Rosenstein-Rodan 1943; Dollar and Kraay 2002). As a consequence, the progress of social indicators follows that of GDP. This view was supported by the empirical evidence of a high and positive correlation of GDP with a number of other development indicators. Thus, why bother about the latter?

If we stick to this tradition, we reach the conclusion the new GDP series does not add much to the long-run picture based on previous, second-generation estimates (Fenoaltea 2003). Figure 18 shows that the level of GDP per capita attained after 150 years of history is

[23] There are exceptions, of course. See the references listed in Vecchi (2003, 2011).

the outcome of a "great leap in the short century" (Toniolo and Vecchi 2010). With the advantage of the historical perspective, the hotly debated acceleration during the Giolitti's years (1901-1913) is dwarfed by the take off starting in the aftermath of World War II. The so-called Italian "economic miracle" was part of a broader phenomenon involving other European countries, e.g. a "miracle" experienced by Western Europe, which caught up with the US. During the last two decades, however, Italy failed to keep the pace with other countries and fell behind most of them.

The well-being of Italians cannot be summarized solely by the GDP dynamics. There is much more to be learned beyond the GDP. By conceptualizing the well-being as an inherently multidimensional phenomenon, we have constructed a dashboard of indicators, that helps to identify the timing, in particular the turning points, of the long-run evolution of the well-being of Italians (Figure 19). Each graph in the figure compares the dynamics of one dimension of well-being (e.g. life expectancy) with that of GDP, after normalising each indicator into the (0,1) interval: 0 is the value of the welfare indicator in 1861, 1 is the value in the most recent available year, and any intermediate values can be interpreted as a measure of the progress, expressed in percentage terms. The shape of the curve, especially its curvature, reveals the extent to which a given indicator correlates with GDP per capita: the higher the (positive) correlation between the welfare indicator measured on the y-axis and GDP (x-axis), the more the curve is close to the 45-degree line which ideally links the bottom-left to the top-right corner. *Vice versa*, a steep curve suggests that the welfare indicator improves far more rapidly than GDP.

The first comment is on health outcomes, probably the domain of Italy's most brilliant achievements. The graph in the top-left corner illustrates the progress of life expectancy relatively to per capita GDP. Using jubilees as benchmark years (vertical lines in the graph) it clearly stands out that the conquest of longevity has been much faster than the conquest of prosperity: in 1911 GDP had reached 5 per cent of the level observed in 2010, while in 1911 life expectancy had already covered 30 per cent of the 2010 level. Similarly, in 1961 GDP had increased up to 25 per cent of the 2010 level, compared to 75 per cent for life expectancy. Overall, the graph is very effective in showing how GDP per capita under-estimate well-being during the first century following Italy's unification, as it fails to capture the swift gains in longevity of the population. On the other hand, the graph leads to revalue the gains in well-being ensued after the Golden Age: exactly half of the total distance covered by per capita GDP during the past 150 years takes place between 1971 and today. The spectacular raise in life expectancy during the first century of Italy's history is largely explained by the fall in infant mortality. It is worth reminding that in 1861 the *median* age at death was less than 5 years for boys and 7 years for girls. There is no country in the world today where half of the population dies at such astonishingly young ages. In 1911, the median age at death in Italy reached 28.7 years for males and 31.5 years for females, a remarkable improvement (both in absolute terms and compared to the growth rate of GDP per capita, which grew by an average 0.8 per cent per year). In 1961, median age at death was 67.7 for males and 72.9 for females. Underlying the process of death's postponement is the reduction of infant mortality, as clearly shown by the second left panel from the top in Figure 19.

As far as education outcomes are concerned, in Figure 19 we consider two sets of indicators, namely school enrolment rates and adult literacy rates. In the case of Italy,

eradication of illiteracy among adults required an extraordinary long time to be completed and the process was largely independent of the GDP level. In 1951, about 80 per cent of Italians adults could read and write, while GDP per capita was 15 per cent of its final level. Confronting the remaining 20 per cent of illiterate adults required another 60 years, a time during which GDP per capita multiplied by a factor of 6. In sum, GDP per capita did not help much to teach Italians to read and write.

Gross enrolment rates tell different stories, depending on the level of education. Primary school enrolment rates improved impressively fast, during a period (1861-1931) in which the increase in per capita GDP was lethargic.[24] After World War II, Italy's population of primary school age (6-10 years) was enrolled: Figure 19 shows that the GER exceeds the 100 per cent ceiling for a number of decades (from the 1920s until the late 1970s – early 1980s), a consequence of the presence of pupils repeating grades and above age children. With reference to secondary education, enrolment rates show a strong positive correlation with GDP, with a nearly-linear timing, that is, education tracks closely GDP's advances. Interestingly, tertiary education enrolment rates appear to be persistently insensitive to changes in the GDP (and vice versa). In 1961, after a whole century had passed since the time of unification, the GER for tertiary school was only 10 per cent of the value it would have in 2010, compared to 25 per cent for GDP. Enrolment rates advanced at a slower pace than GDP until the mid 1980s; thereafter, a dramatic acceleration brought the GER at 40.5 per cent in 2008. The somehow paradoxical nature of this pattern has been emphasized by Bertola and Sestito (2011) – "For the period after 1990, ... Italy's overall growth performance was, at less than 1% yearly average, the second slowest (only ahead of Switzerland) in the 12-countries comparison group". The fact that tertiary GERs increase exactly when productivity slows down corroborates the Bertola and Sestito's claim according to which the slowdown of Italy's economy since the 1990s may partly reflect its educational system's quality deterioration.[25]

7. Some concluding remarks

"Backwardness" is probably the term that best summarizes Italy's socio-economic conditions at the time of the country's political and administrative unification (Toniolo 1988). The well-being of Italians was not only far-off from the level reached today, but also much lower than that of the citizens of most developed countries. In the first part of the paper we have examined a range of indicators which helped evaluating the extent of the Italian progress since unification, as well as the timing of this progress.

Approaching the first jubilee year of Italy's unification, Mr. Paolo Carcano, Minister of Economy and Finance in the third Giolitti's government, expressed both satisfaction for the objectives achieved and optimism for Italy's future prospects:

> "It is from the whole of the gathered elements that I feel confident to look with hope to the next future, and to foresee a new significant improvement of the general conditions

[24] In interpreting the graph some caution is due to the limitation of the gross enrolment rate as an education outcome. All this probably leads to overestimate the speed of the progress which brought kids into classrooms. See also A'Hearn, Auria and Vecchi (2011) and Bertola and Sestito (2011).

[25] Ciocca (2007) stressed how the productivity turnaround after mid 1990s was historically unprecedented.

of our country. Not as rich as many superficial and optimist minds would it like to be, but not even as miser as all those mourning at a minor difficulty often suggest. The country works and learns. As the first steps are often the most difficult ones, the progress achieved over not such as a long period of time encourages us to be positive about our future. Memories of the past warm our hearts and spur us to do our best" (Carcano 1909, pp. 46-47).

The evidence discussed in this paper provides unambiguous support to Mr. Carcano's assessment. In fact, according to the dynamics of non-monetary welfare indicators the improvement in living standards of Italians turns out even rosier than that depicted by the financial and economic indicators accessible to the Minister.

The findings reviewed in the paper are rich of implications for Liberal Italy (1861-1913). First, the well-being of Italians is severely underestimated if measured by per capita GDP. Many indicators, including health and education outcomes, improved dramatically vis-à-vis a gentle increase in average national income. Other indicators were sluggish in their dynamics, despite rapid economic growth. Second, improvements have been both in absolute terms (e.g. Italy in 1911 vs. Italy in 1861) and in relative terms (e.g. Italy vs. other comparable countries). We found no evidence of "dark satanic mills" during Italy's industrialization (Williamson 1981), at least in the aggregate indicators. Third, if we use the GDP's yardstick for the standard of living we reach the conclusion that during the late 19th century globalization, with its unprecedented movements of capital and labour across national frontiers (Williamson 1996), Italy failed to converge with the leading countries. However, adopting other non-monetary based welfare measures that conclusion is sometimes reversed: Italy did succeed in catching up with the leaders in life expectancy and infant mortality. The question "convergence of what?" is therefore a non-trivial one when investigating gainers and losers in the process of globalization. Fourth, the average living conditions of Italians improved relatively fast without a deterioration of its distribution. Unlike in other countries, in Italy income inequality did not increase, nor did other welfare indicators, such as heights and health outcomes, ever reversed their ascending trend. The regional analysis carried out in Vecchi (2011) shows that between 1861 and 1911 the improvement in the living conditions spread across the country. In particular, the Mezzogiorno tremendously improved its conditions during the decades subsequent the unification. All this addresses some of the key issues raised by Federico (1996) and sheds new light on Italy's economic development: we can no longer say, with Federico, that Italy's success story is a little-known one.

The Great War stopped Italy's catching up. During the interwar years, Fascist Italy opted for autarchy thereby partaking in the world-wise process of deglobalization. The trends of all indicators during the *Ventennio* show that the well-being of Italians did not benefit from this choice; while GDP per capita continued to grow in parallel with other countries, the march towards better living standards slowed down. In fact, now and then it even came to a halt: child work, for instance, increased during the recovery from the Great Depression (1931-1936). Inequality appears to have risen too – only slightly according to the estimates based on households' incomes, more sizeably in terms of consumption according to Rossi, Toniolo and Vecchi (2011). After estimating the "growth incidence curve" (Ravallion and Chen 2003) for the years 1921-31, Amendola, Salsano and Vecchi (2011) have concluded that the bottom half of the population benefited the least from economic

growth, with most benefits accruing to the richest 20-30 per cent of the population. The geographical gap between the North and the South widened: it happened for life expectancy at birth and infant mortality (Atella, Francisci and Vecchi 2011) and for the heights of conscripts (A'Hearn and Vecchi 2011). The combination of two world wars, the most severe economic crisis ever experienced in modern times and the autarchic strategy negatively affected the trend of welfare indicators, but all in all the well-being of Italians kept rising, if more slowly.

In the immediate aftermath of World War II, standard of livings in Italy deteriorated dramatically. Hunger became widespread: according to Sorrentino and Vecchi (2011), half of the population was undernourished during the years 1946-47. In 1951 a *Commissione parlamentare d'inchiesta* was set up and assigned the task of investigating the extent and nature of poverty in the country. Irrespective of the indicator used to measure the incidence and depth of destitution, both the evidence of a large-scale survey and the qualitative accounts were as gloomy as in late 19th century investigations. Italy had undoubtedly tumbled in the past. The recovery was impressively fast, however, and was paralleled by a profound transformation of the society and the lifestyle of Italians; in the 1950s and 1960s, economic performance was indeed extraordinary by historical standards, though less so by international standards. The North-South GDP gap narrowed significantly, this being the only episode of convergence during 140 years for which GDP estimates are available separately by macro regions (Brunetti, Felice and Vecchi 2011).

The findings of the paper also lead to an interesting reappraisal of the 1970s. Despite the complexity of those years – afflicted by harsh social conflicts, terrorism, political turbulence, two major oil crises, and high international instability – economic growth remained well above 3 per cent per year and was distinctly "pro-poor", particularly in the Northern regions (Lombardo 2011): both inflation and unemployment rose considerably, but income inequality and absolute poverty fell considerably, in line with Rossi's (2007) analysis of the functional distributional of income. As stressed by Rossi and Toniolo (1996), however, the 1970s left many problems unresolved, most importantly those linked to the structural reforms required to foster and sustain future economic growth. The solution found in the 1980s enabled Italians to further improve their living standards by fuelling welfare expenditures (Conte, Rossi and Vecchi 2011; Ferrera 1984), but at the price of a public debt soaring from 51 per cent of GDP in 1982 to 102 per cent in 1990. Current well-being was being traded against the well-being of future generations.

The currency crisis of 1992 marks a turning point in the trend of the well-being. After 130 years of economic growth accompanied by a narrowing income distribution, Italy entered a phase characterised by low economic growth, persistently high inequality and increasing sense of vulnerability (Boeri and Brandolini 2004; Brandolini 2005; Rossi and Vecchi 2011). The welfare levels achieved in the present day may not be necessarily enjoyed by future generations (Brandolini and D'Alessio 2011). At 150 years since unification, the sense of accomplishment for the success in heading the country "from the periphery to the centre" (Zamagni 1998) mixes with the founded concern that today's achievements need not be forever.

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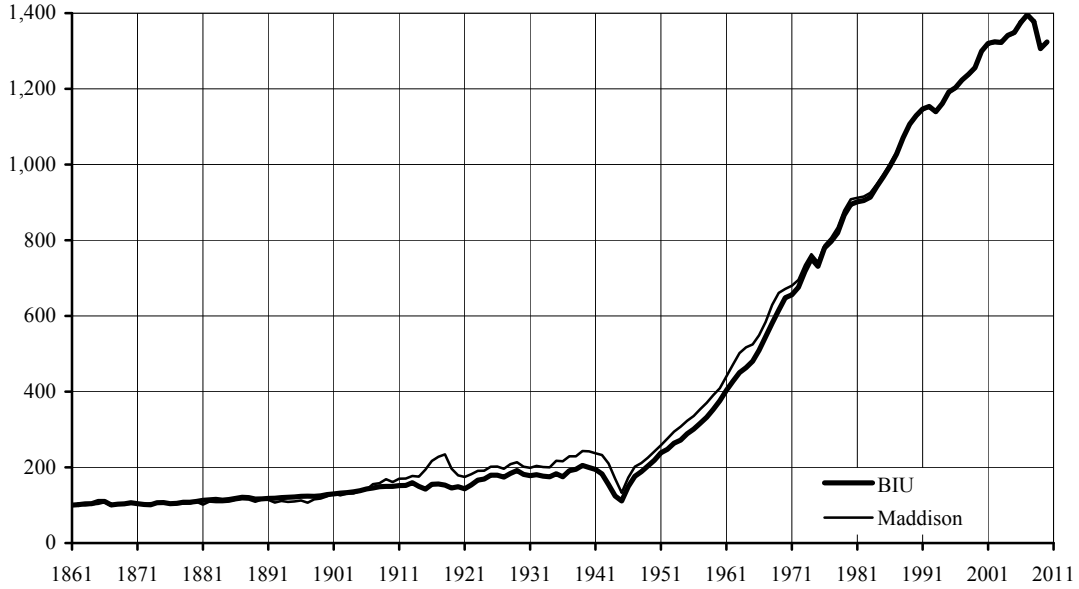
Table 1 – Income distribution statistics

Year	Sample size (households)	Mean per capita (2010 euros)	Ratio to GDP per capita (%)	Gini index	Atkinson index ε=.125	Atkinson index ε=1	Atkinson index ε=2
1861	1,234	1,461	68.9	0.504	0.063	0.346	0.503
1871	1,614	1,557	74.2	0.450	0.045	0.285	0.451
1881	1,550	1,687	74.6	0.472	0.054	0.307	0.456
1891	1,983	1,730	71.5	0.473	0.057	0.308	0.450
1901	1,597	1,901	71.7	0.486	0.054	0.328	0.506
1911	1,427	2,139	70.1	0.460	0.047	0.299	0.476
1921	1,562	2,317	71.3	0.451	0.050	0.285	0.431
1931	2,274	2,366	65.0	0.449	0.043	0.295	0.495
1948	10,732	4,069	106.7	0.416	0.044	0.250	0.381
1967	3,140	4,006	36.5	0.391	0.034	0.234	0.414
1968	3,277	4,171	35.7	0.408	0.036	0.245	0.419
1969	3,118	4,574	37.0	0.397	0.034	0.233	0.401
1970	3,297	4,597	35.2	0.383	0.031	0.220	0.392
1971	6,035	4,841	36.6	0.397	0.034	0.241	0.432
1972	5,889	5,012	36.7	0.385	0.032	0.226	0.405
1973	5,175	6,507	44.8	0.401	0.035	0.239	0.412
1974	4,605	6,673	43.8	0.391	0.032	0.233	0.419
1975	4,445	6,588	44.5	0.353	0.026	0.192	0.356
1977	2,915	8,008	49.7	0.358	0.028	0.191	0.329
1978	3,044	8,189	49.4	0.329	0.024	0.165	0.297
1979	2,886	9,126	52.2	0.361	0.029	0.196	0.339
1980	2,980	9,366	51.9	0.332	0.024	0.166	0.289
1981	4,091	8,678	47.8	0.315	0.021	0.150	0.268
1982	3,967	8,891	48.8	0.297	0.018	0.133	0.241
1983	4,107	8,965	48.6	0.300	0.019	0.137	0.249
1984	4,172	9,670	50.8	0.321	0.022	0.156	0.279
1986	8,022	9,175	45.6	0.307	0.020	0.145	0.267
1987	8,027	9,974	48.1	0.318	0.022	0.157	0.287
1989	8,274	11,375	50.9	0.300	0.019	0.137	0.248
1991	8,188	11,775	51.0	0.305	0.020	0.142	0.256
1993	8,089	11,061	48.0	0.328	0.023	0.168	0.312
1995	8,135	11,291	46.7	0.331	0.023	0.171	0.317
1998	7,147	12,230	48.5	0.342	0.026	0.183	0.336
2000	8,001	12,816	48.3	0.333	0.024	0.174	0.322
2002	8,011	13,461	49.7	0.328	0.023	0.168	0.312
2004	8,012	15,164	56.0	0.351	0.027	0.189	0.336
2006	7,768	15,807	57.6	0.337	0.025	0.175	0.319
2008	7,977	15,283	56.5	0.327	0.023	0.165	0.305

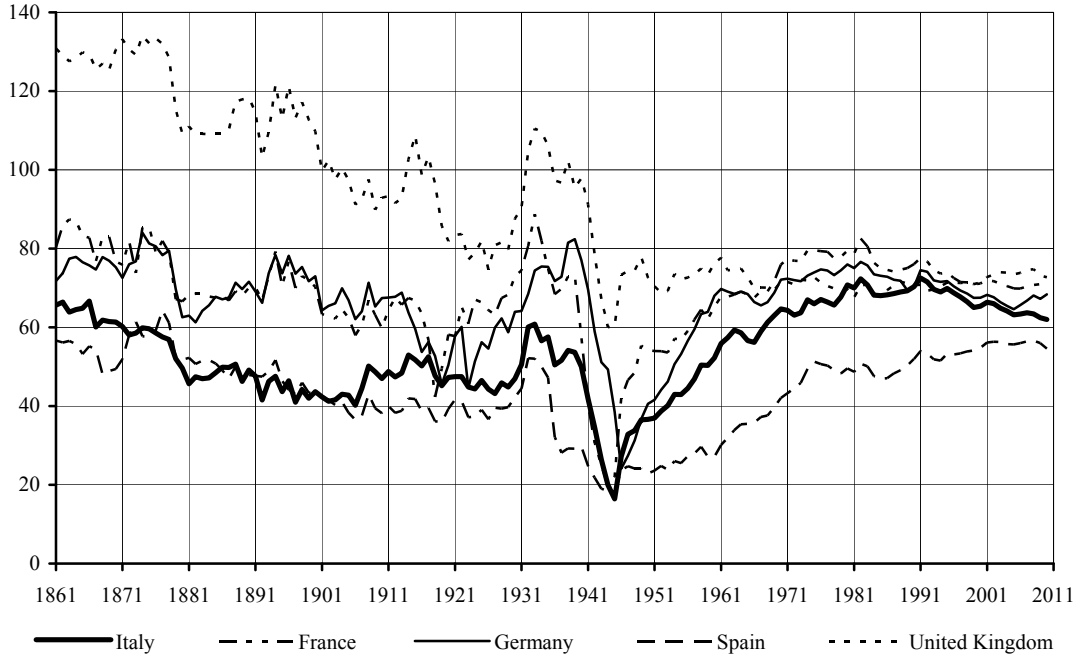
Sources: authors' elaborations on data from IHBD-II (1861-1931), Doxa (1948) and SHIW (tabulations 1967-1975; microdata 1977-2008).

Figure 1: GDP per capita in Italy (index: 1861=100)



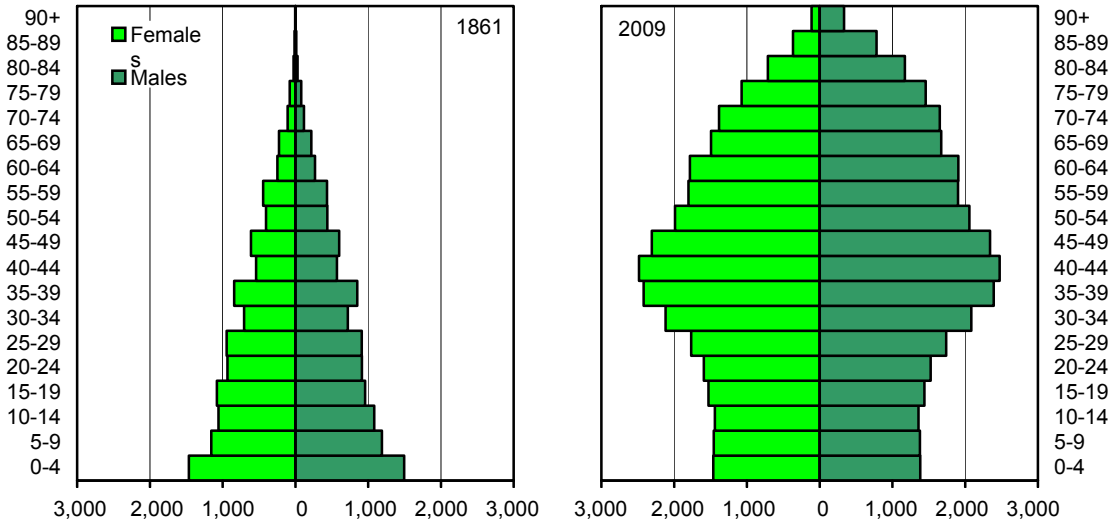
Source: authors' elaboration.

Figure 2: GDP per capita in selected countries (index: United States=100)



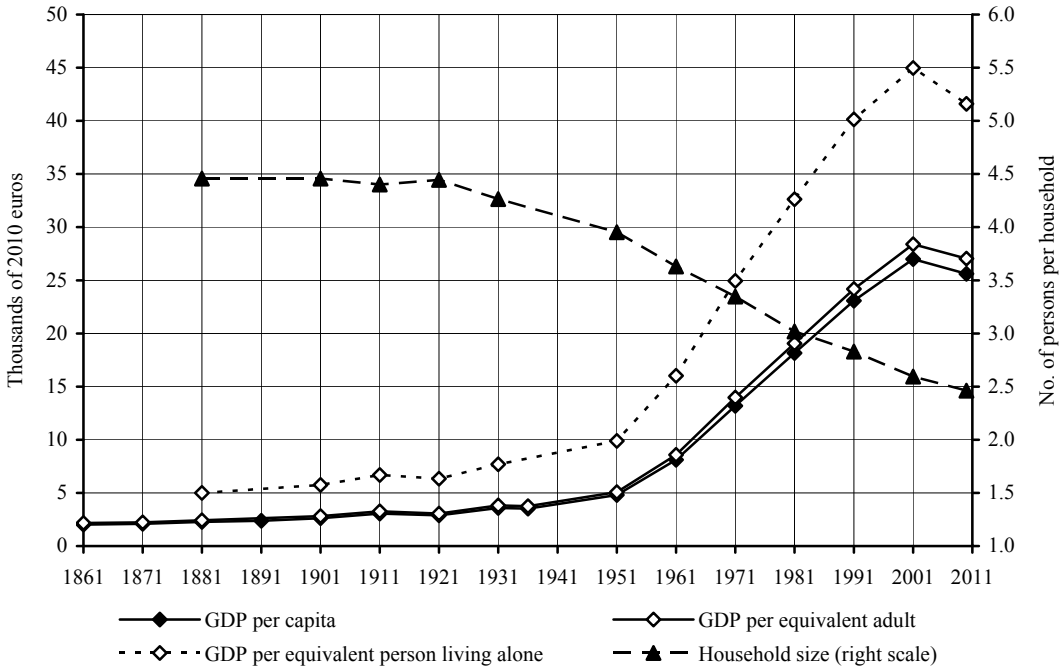
Source: authors' elaboration on data from Maddison (2010) and Conference Board (2011); underlying values are in 1990 international Geary-Khamis dollars. Data for Italy in 1915-1920 are adjusted on the basis of the new BIU series.

Figure 3: Population structure in Italy (thousands of persons)



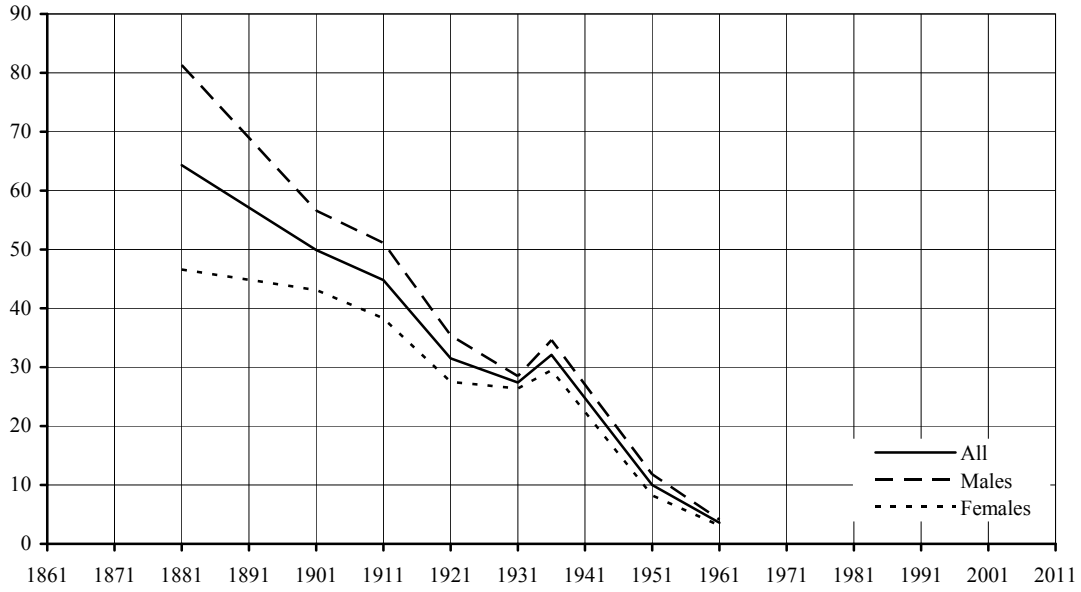
Source: authors' elaboration on Istat demographic statistics. Figures as of 31st December.

Figure 4: GDP per capita and per equivalent person in Italy



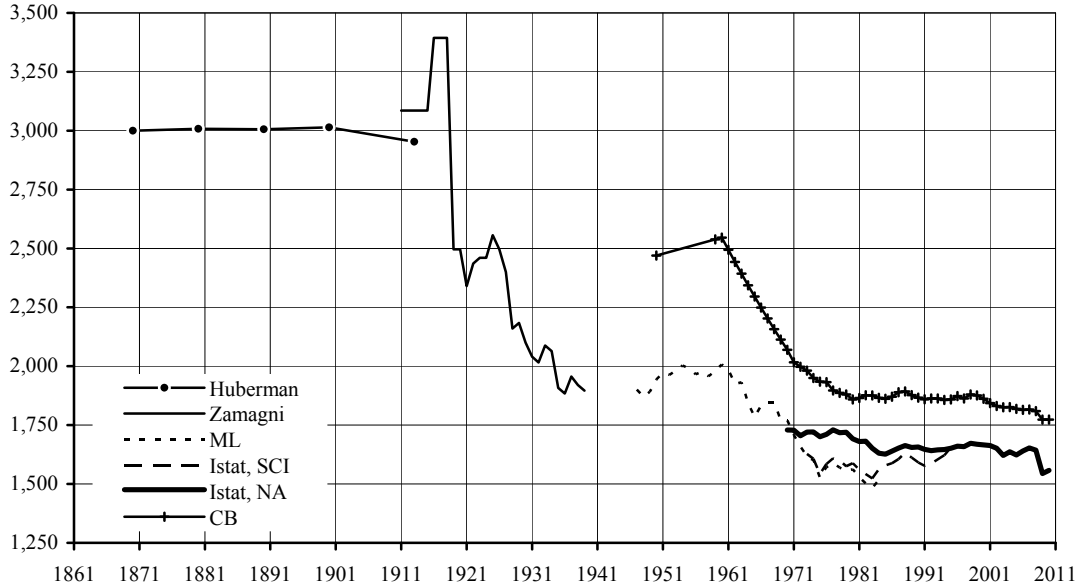
Source: authors' elaboration.

Figure 5: The incidence of child work in Italy (share of economically active persons aged 10-14 years)



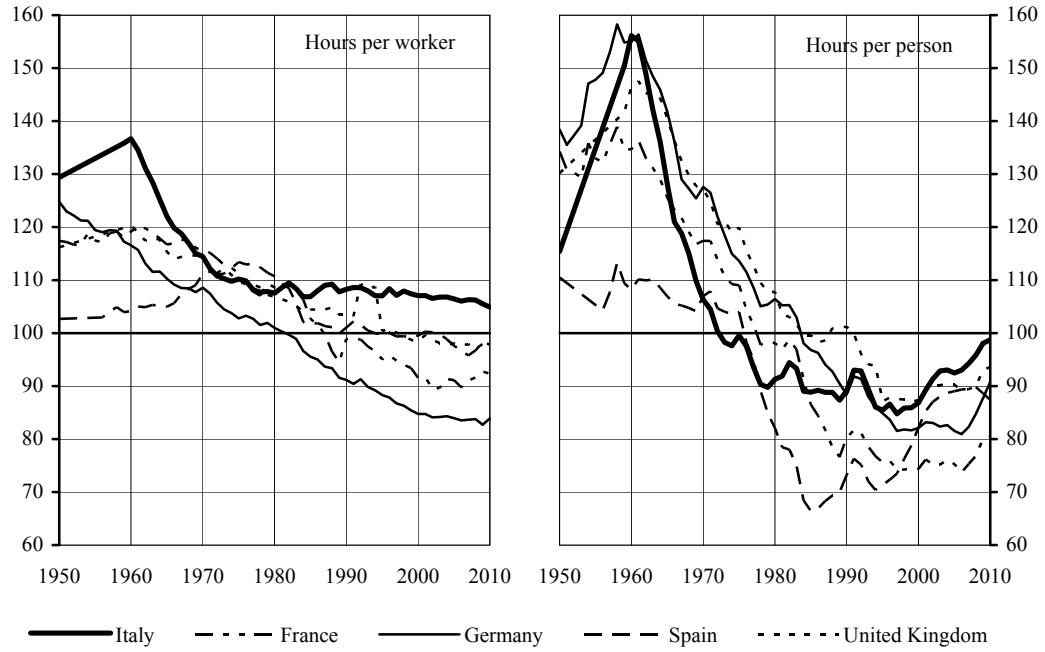
Source: Toniolo and Vecchi (2007) on census data.

Figure 6: Annual hours of work in Italy



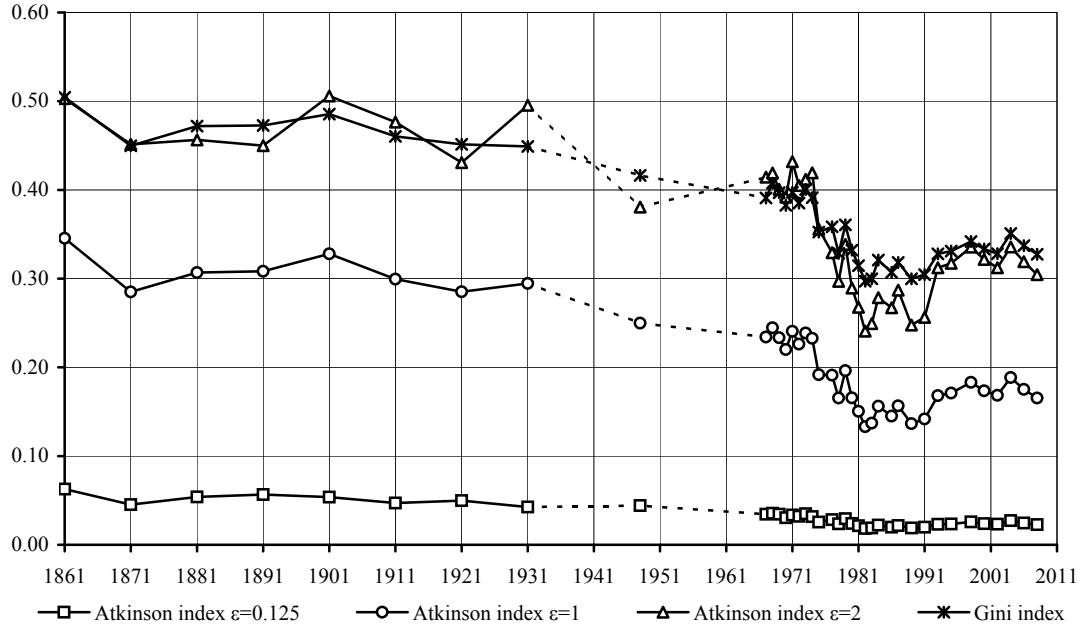
Source: authors' elaboration on data from: *Huberman*: Huberman (2004), Tab. 6, p. 982, industrial manual workers; *Zamagni*: 1911-18: Zamagni (1975), Tab. 1, p. 532, industrial manual workers, hours of work per day multiplied by 6×30/7×12; 1919-39: Zamagni (1994), industrial manual workers, hours of work per month multiplied by 12; *ML*: Ministero del Lavoro's survey of industrial establishments with at least 10 employees (50 since 1978), industrial manual workers; *Istat, SCI*: Istat's survey of firms with at least 50 employees, industrial manual workers; *Istat, NA*: Istat's national accounts (from EU-KLEMS for 1970-79), all industrial employees; *CB*: Conference Board (2011), total economy, all employed.

Figure 7: Annual hours of work (index: United States=100)



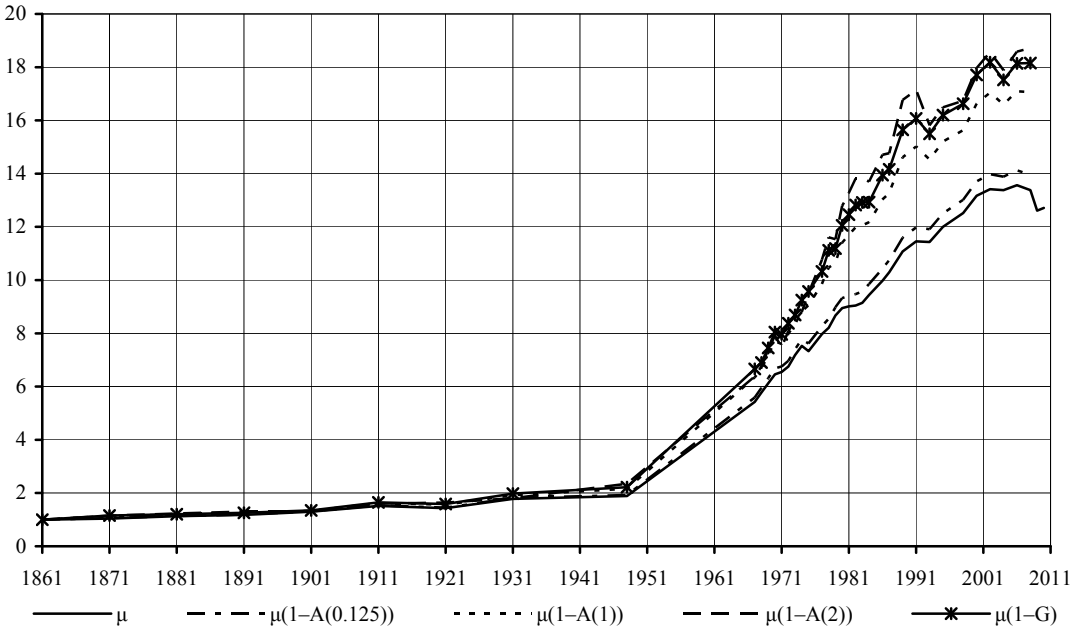
Source: authors' elaboration on data from Conference Board (2011).

Figure 8: Gini index of per capita income in Italy (per cent)



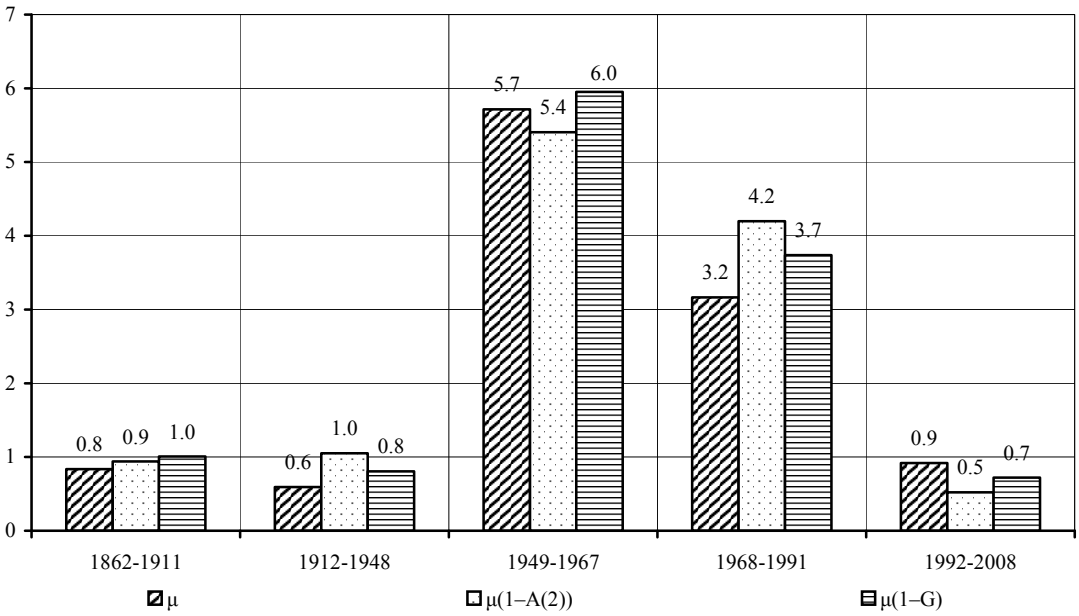
Source: Amendola, Brandolini, Vecchi (2011).

Figure 9: Distributionally-adjusted measures of real income in Italy (index: 1861=1)



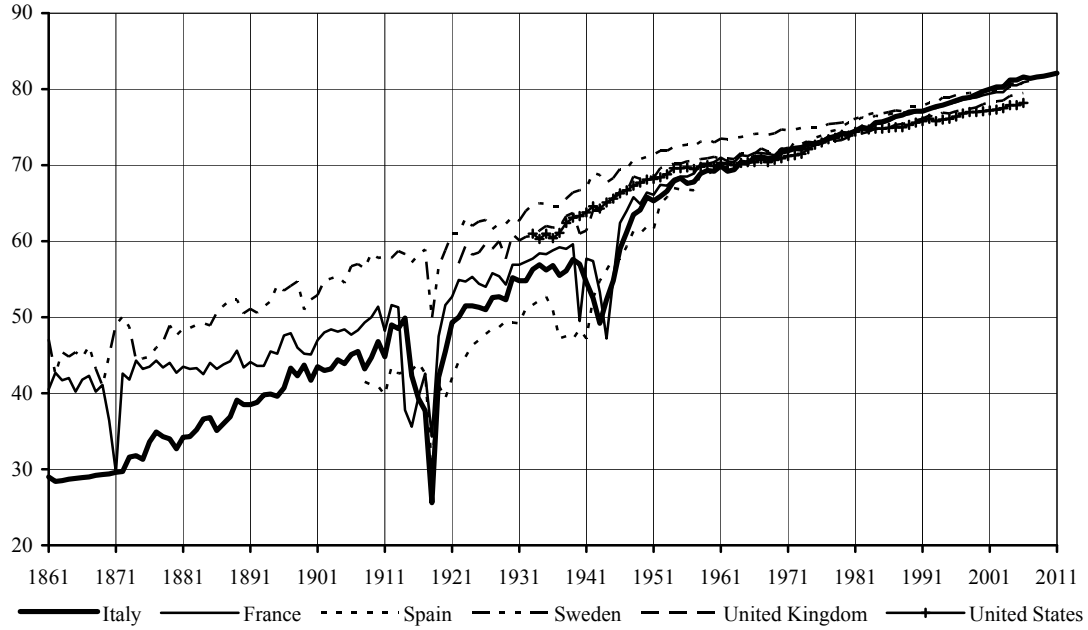
Source: authors' elaborations. μ is GDP per capita, *A* is the Atkinson index calculated for the value of ε indicated in parentheses and *G* is the Gini index.

Figure 10: Annual growth rate of real income measures in Italy (per cent)



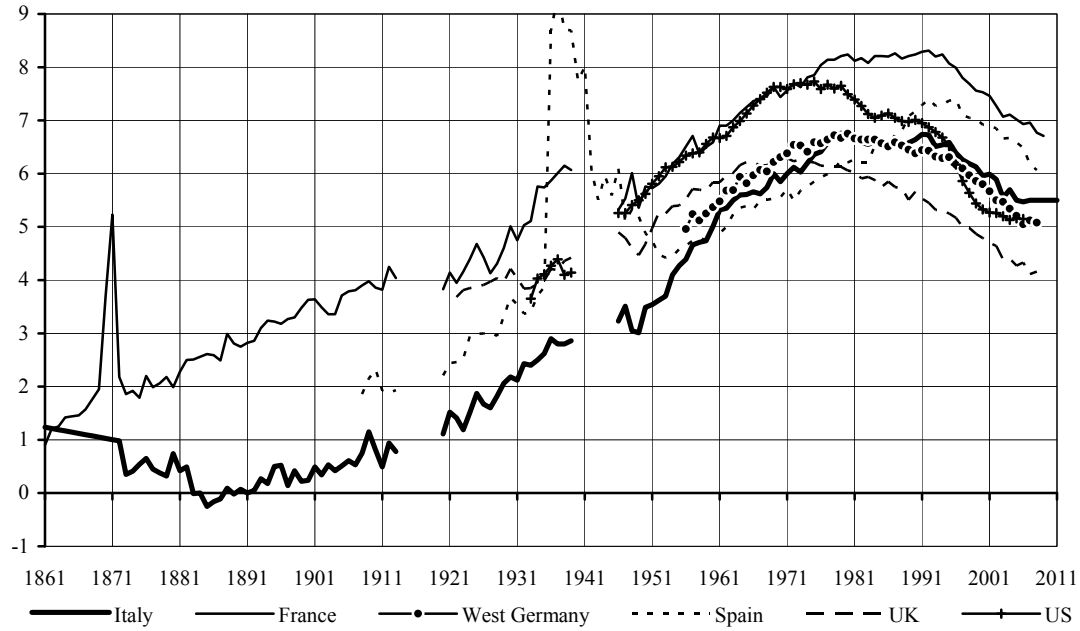
Source: authors' elaborations. μ is GDP per capita, *A* is the Atkinson index calculated for ε=2 and *G* is the Gini index.

Figure 11: Life expectancy at birth in selected countries



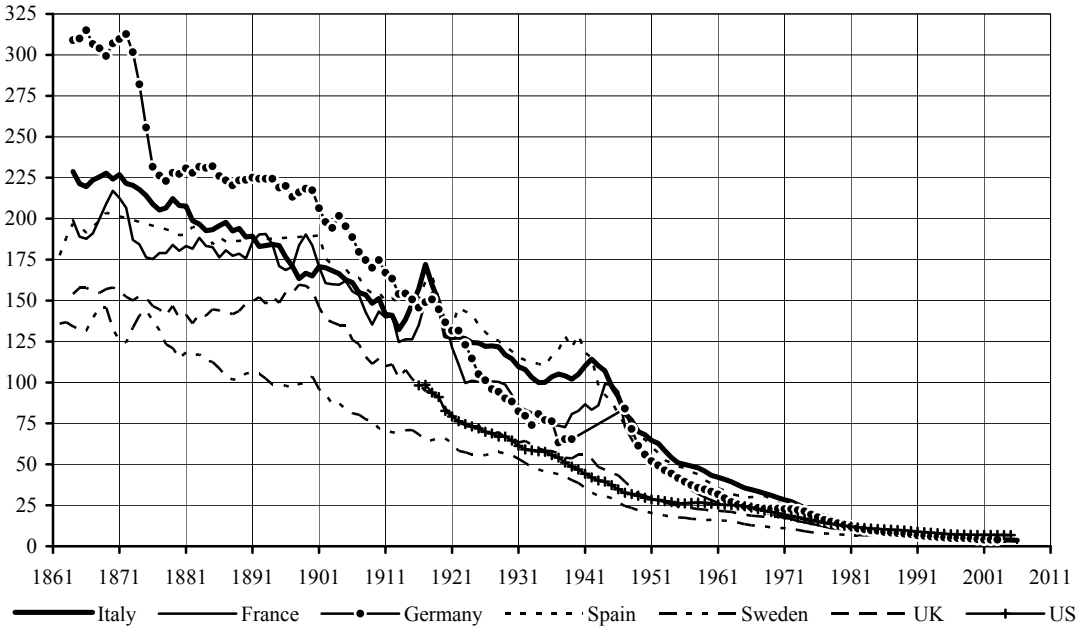
Source: Atella, Francisci and Vecchi (2011).

Figure 12: Male-female difference in life expectancy at birth in selected countries (years)



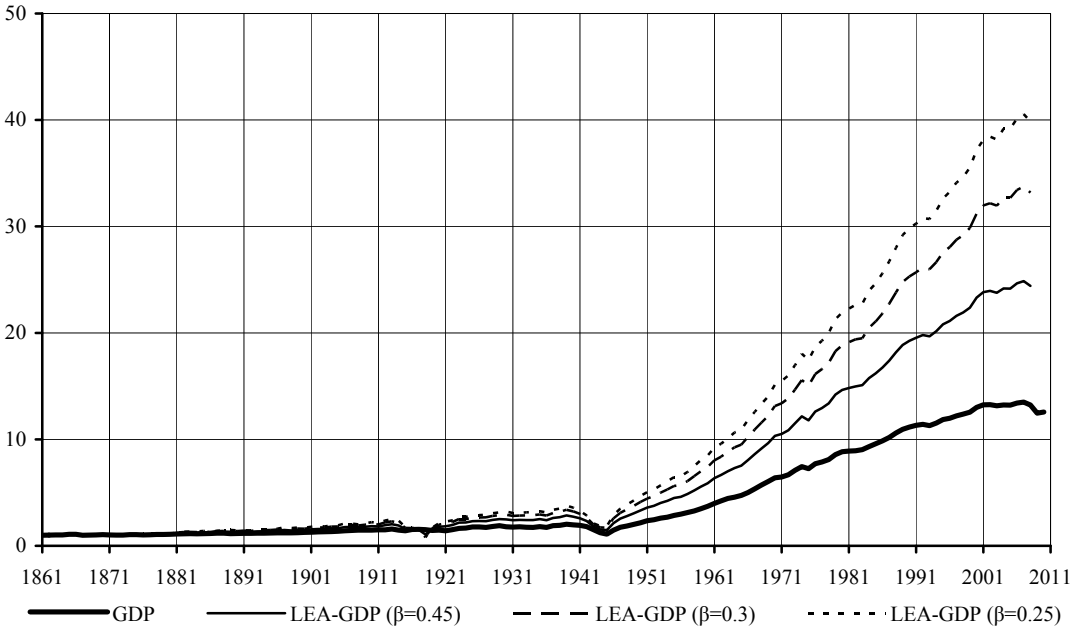
Source: authors' elaboration. The years 1914-19 and 1940-45 (except for Spain) were eliminated to eliminate the impact of wars.

Figure 13: Infant mortality rate in selected countries (deaths within first year of life per 1,000 live births, 3-year centred moving average)



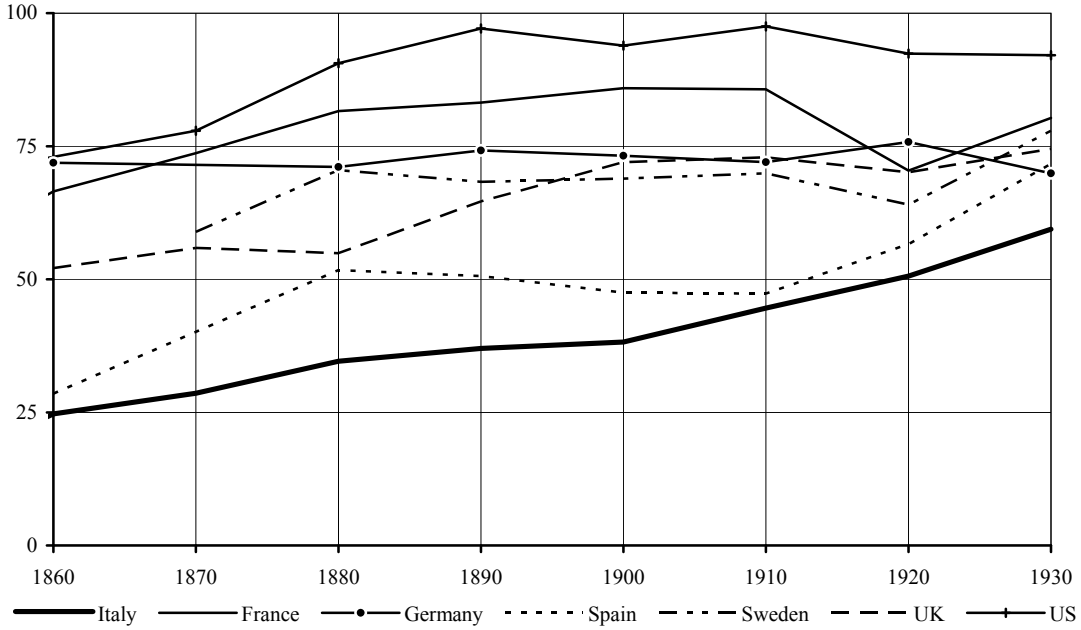
Source: authors' elaboration on data from Mitchell (2008).

Figure 14: GDP per person and GDP adjusted for longevity in Italy (index: 1873=1)



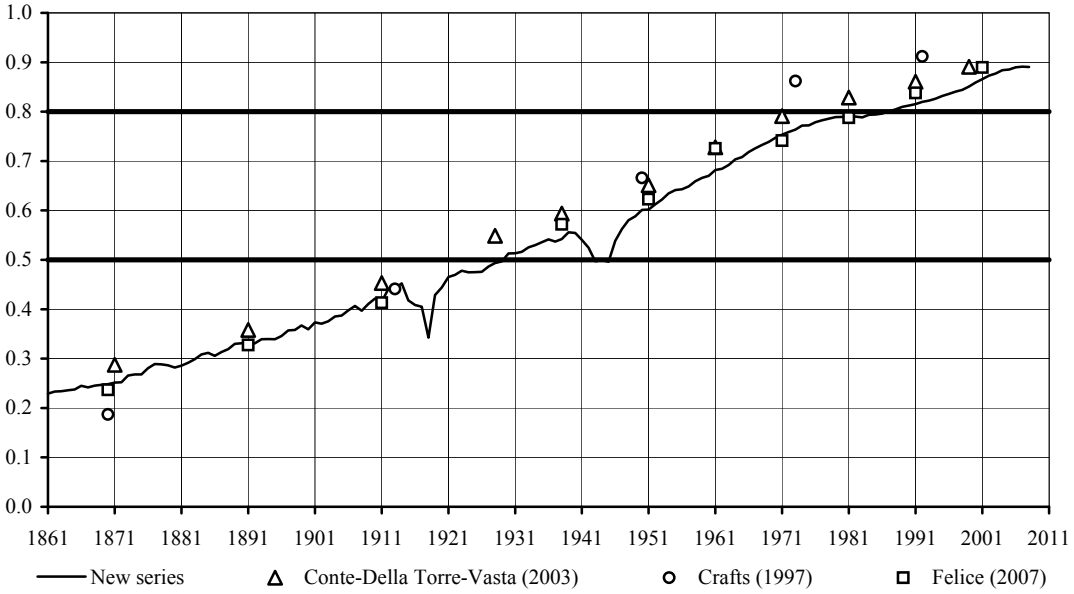
Source: authors' elaboration. GDP is GDP per capita, LEA-GDP is life-expectancy-adjusted GDP per capita calculated for three values of the elasticity β.

Figure 15: Gross Enrolment Rate in primary school in selected countries



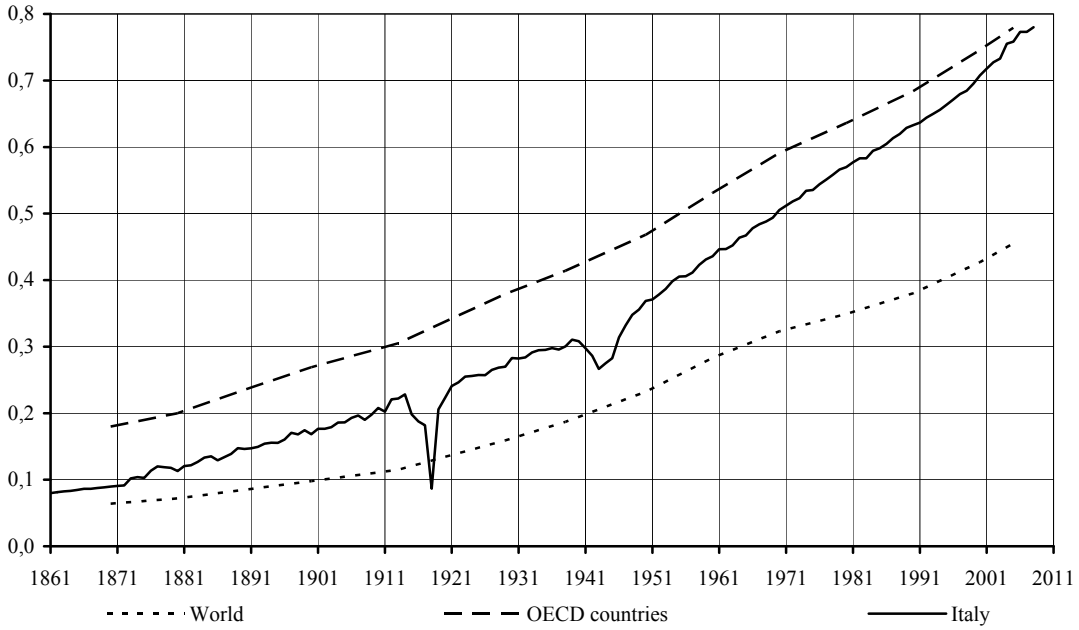
Source: authors' elaboration on data from Lindert (2007).

Figure 16: Human Development Index in Italy



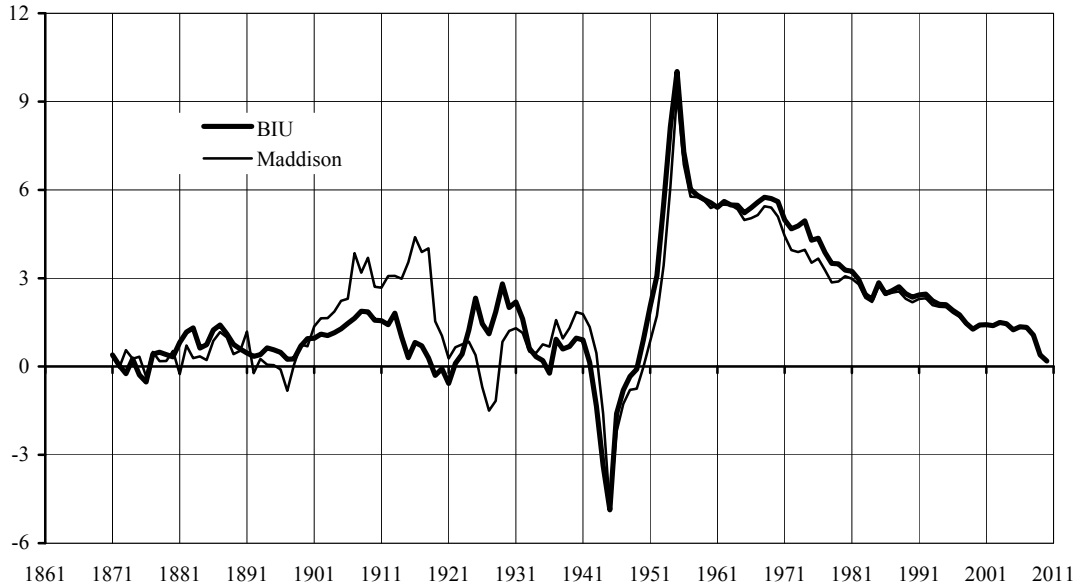
Source: authors' elaboration and cited sources.

Figure 17: Improved Human Development Index in Italy, the OECD countries and the World



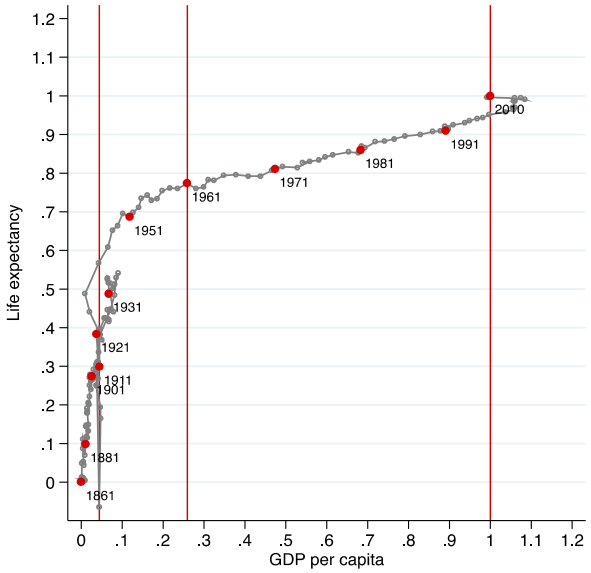
Sources. Italy: authors' elaboration; OECD (comprising Western Europe and its offshoots, the USA, Canada, Australia and New Zealand plus Japan) and World: Prados de la Escosura (2010).

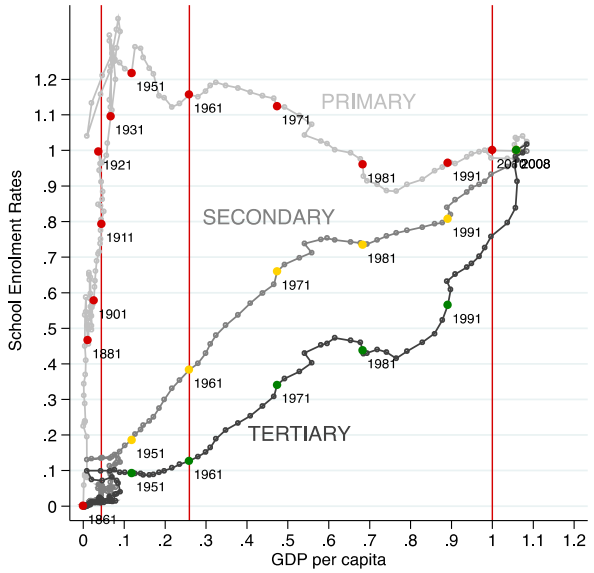
Figure 18: GDP per capita in Italy (Moving average decennial growth rate, per cent)

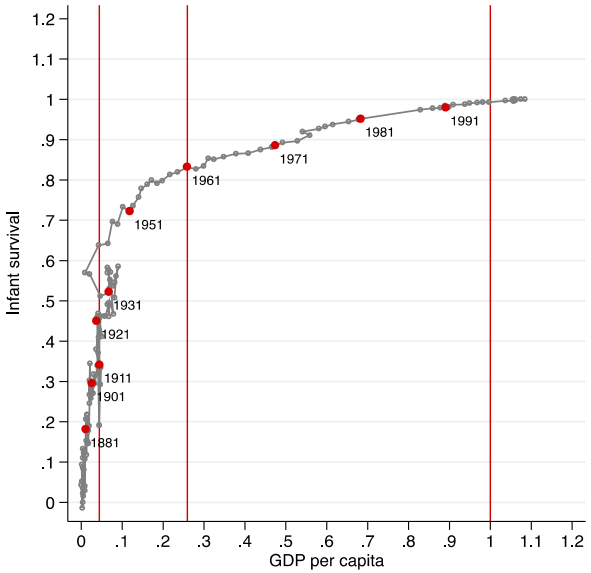


Source: authors' elaboration.

Figure 19: The time patterns of selected welfare indicators versus GDP per capita in Italy







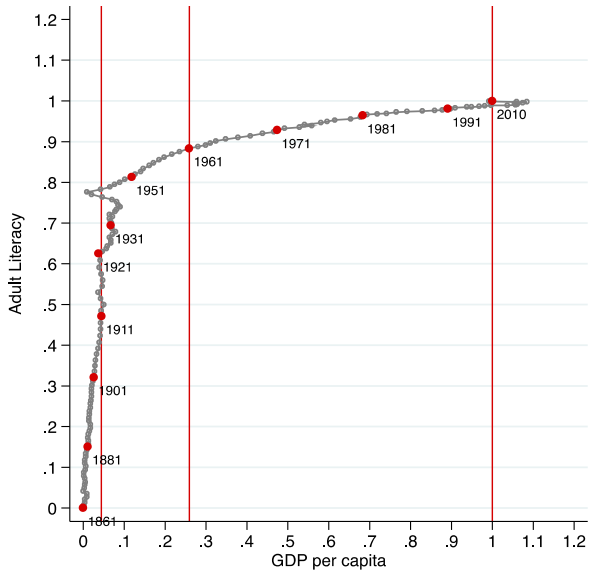
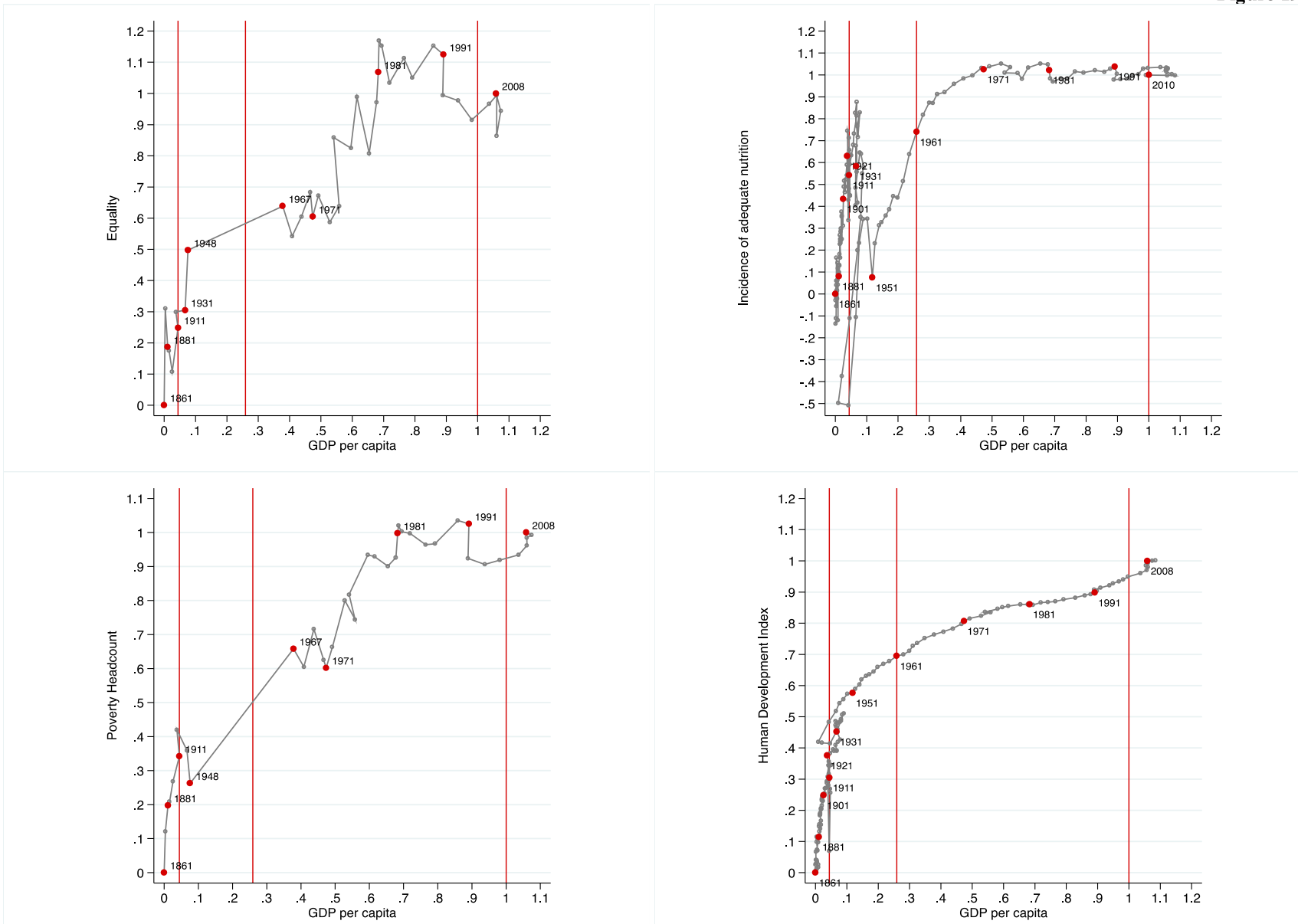


Figure 19 (cont.)



Source: authors' elaboration. each panel compares the dynamics of a welfare indicator (vertical axis) with that of GDP per capita (horizontal axis). All variables have been transformed according to the formula: $(X–X_{1861})/(X_{2010}–X_{1861})$, where 1861 denotes the earliest available year and 2010 the latest one.

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