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**Abstract:** The article presents and discusses estimates of social and economic indicators for Italy's regions in benchmark years roughly from Unification to the present day: life expectancy, education, Gdp per capita at purchasing power parity, and the new Human Development Index (HDI). A broad interpretative hypothesis, based on the distinction between passive and active modernization, is proposed to account for the evolution of regional imbalances over the long-run. In the lack of active modernization, Southern Italy converged thanks to passive modernization, i.e., State intervention: however, this was more effective in life expectancy, less successful in education, expensive and as a whole ineffective in Gdp. As a consequence, convergence in the HDI occurred from the late XIX century to the 1970s, but came to a sudden halt in the last decades of the XX century.

**Key words:** Italy, regional growth, human development, Gdp, education, life expectancy

**Códigos JEL:** N30, N33, N34, N90, O15

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*Le rivoluzioni attive sono sempre più efficaci, perché il popolo si dirige subito da sé stesso a ciò che più da vicino lo interessa. In una rivoluzione passiva conviene, che l'agente del governo indovini l'animo del popolo, e gli presenti ciò che desidera, e che da sé stesso non saprebbe procacciarsi.\**

Vincenzo Cuoco, *Saggio storico sulla Rivoluzione di Napoli del 1799* (1861, p. 94)

## 1. Introduction

Italy's regional disparities have been vastly debated, but a fully reconstruction of the historical pattern is not yet satisfactory. Still there is uncertainty about the North-South divide around the time of Unification,<sup>1</sup> the determinants of regional imbalances over the short and the long run,<sup>2</sup> as well as basic social indicators such as personal income inequality.<sup>3</sup> Some consensus has been reached for what concerns the trend of per capita Gdp in the XX century: here the available evidence shows the failure of Southern Italy to catch-up with the rest of the country over the long-run.<sup>4</sup>

The falling back of Southern Italy in terms of Gdp is quite disappointing, particularly because the problem of the South (or *questione meridionale*) has been in the political agenda for over a century. The convergence during the economic boom of the 1950s had raised many hopes to fill the gap, and massive regional policies had been rolled out by the Italian State throughout the second half of the XX century. More recently, frustration left room to resignation, from which in the last decades a new approach to the *questione meridionale* has emerged: based on the category of 'diversity', rather than of 'backwardness', when it comes to compare the South with the rest of the country. With important exceptions,<sup>5</sup> many (new) 'meridionalists'<sup>6</sup> got progressively involved in this reconsideration:<sup>7</sup> once it was realized that advanced economic growth was partly denied to Southern Italy, some scholars came to the conclusion that this growth was after all unattractive. As efficaciously noted, these scholars looked like such a husband who, having been betrayed by his wife, would go around speaking against all the women in the world.<sup>8</sup> However, the major question posed by the new meridionalists should not be dismissed: is it possible that the position of

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\* *Authors' translation*: "Active revolutions are always more effective, because people themselves go straight to what interests them more closely. In a passive revolution, the government agent must guess the mood of the people, and offer them what they want and were not able to obtain by themselves."

<sup>1</sup> Felice and Vecchi, "Italy"; Daniele and Malanima, "Il prodotto delle regioni"; id., *Il divario Nord-Sud*. For the long-run evolution of GDP in Central and Northern Italy (1300 to 1913), see Malanima, "The long decline".

<sup>2</sup> Felice, "Regional convergence".

<sup>3</sup> Amendola, Brandolini, and Vecchi, "Disuguaglianza".

<sup>4</sup> Felice, "Regional value added," id., "Regional development"; Daniele and Malanima, "Il prodotto delle regioni".

<sup>5</sup> E.g. Galasso, *Il Mezzogiorno*.

<sup>6</sup> As scholars on Southern Italy are often named. It may be worth noticing that such a label (meridionalists) is analogous to those (orientalists, africanists) used for countries with structural characteristics supposedly different from those of the Western world, and which therefore may also follow different rules of historical and social inquiry. See Said, *Orientalism*.

<sup>7</sup> E.g. Cassano, *Il pensiero*.

<sup>8</sup> Cafagna, "Modernizzazione" p. 240.

Southern Italy was not so bad, after considering more comprehensive indicators of well-being such as the Human Development Index (henceforth HDI)?

This article takes seriously the abovementioned question. Its first goal is to go beyond the measurement of mere economic growth, by using indicators of well-being and human development for Italy's regions: i.e. estimates of life expectancy (longevity), of education (knowledge), of real Gdp (income, or resources), and consequently of the new HDI introduced by United Nations (UN) in 2010, in benchmark years roughly spanning from Unification until our days. Most of the estimates presented (real Gdp in the Liberal age, education and the new HDI for the entire period) are completely new, while others (life expectancy for most of the benchmarks,<sup>9</sup> real Gdp from 1938 to 2001<sup>10</sup>) have been previously published only in Italian. In economic history, the works on HDI by Nicholas Crafts<sup>11</sup> and Leandro Prados de la Escosura<sup>12</sup> are focused on cross-country comparisons and do not present sub-national figures. As far as Italy is concerned, the recent work by Andrea Brandolini and Giovanni Vecchi offers long-run estimates of human development, as well as of other well-being indicators, for the whole of country, but does not enter into regional details;<sup>13</sup> regional (in some cases even provincial) estimates are instead presented and discussed in the recent seminal book edited by Vecchi, where, however, a dashboard approach is explicitly preferred to the construction of composite indicators, and thus each single dimension is treated individually.<sup>14</sup>

The second goal of the article is to elaborate and test the hypothesis of 'passive modernization', i.e. modernization caused by 'external' (State) intervention, which can explain the observed historical regional patterns. In this case we define 'modernization' as the process of catching-up not only for Gdp but looking at a wider range of dimensions which are the above mentioned components of the HDI.

In the following paragraph (§2) the basic concepts about active and passive modernization are presented and discussed with regard to Italian regional development in the long run perspective. In § 3 the procedures used to prepare HDI series are briefly introduced. The subsequent paragraphs (§§ 4-5) focus on the historical evidence: § 4, after having introduced and discussed HDI and its related proxies, put Italy and his macro-regions in comparative perspective with other main developed countries. In § 5 all new estimates for the hybrid HDI and its components are presented at regional level: the HDI (§ 5.1), the series for life expectancy (§ 5.2), education (§ 5.3) and real per capita Gdp (§ 5.4) are introduced and discussed. At the same time, we will discuss the

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<sup>9</sup> See Felice, "I divari regionali in Italia"; id., *Divari regionali*. Most of Felice's regional figures come from Conte, Della Torre, and Vasta "The Human Development Index," where data for Italy's macro-areas are presented. See the Appendix of this article for details on sources and methods.

<sup>10</sup> Brunetti, Felice, and Vecchi, "Reddito".

<sup>11</sup> Crafts, "The human development index: some historical comparisons"; Prados de la Escosura, "The human development index: some revised estimates".

<sup>12</sup> Prados de la Escosura, "Improving Human Development"; Id., "Human Development in Africa"; Id., "World Human Development".

<sup>13</sup> Brandolini and Vecchi, "The Well-Being of Italians".

<sup>14</sup> In more detail, for the single dimensions of the HDI, see the book chapters: Atella, Francisci, and Vecchi, "Salute"; A'Hearn, Auria, and Vecchi, "Istruzione"; Brunetti, Felice, and Vecchi, "Reddito".

inequality pattern in the light of the interpretative framework proposed, i.e. with a particular focus on the role of State intervention. Did Southern Italy converge in some dimensions more easily than in others, and why? Is there something we can learn from the Italian experience which can be profitably extended also to other countries and regions? The article is intended to address these issues, and its main findings are summed up and discussed in § 6, as well as in the conclusion (§ 7). An extended Appendix deals with sources and methods of the estimates, and presents regional figures of the new HDI.

## **2. On modernization ('active' and 'passive')**

We define modernization in a more comprehensive way than usually done by a strict economic approach. This focuses on technological progress, whose result – broadly speaking – is the rise in productivity and thus in per capita income: accordingly, per capita (or per worker) Gdp should be taken as the principal measure of modernization. Following the capability and human development approach as defined primarily by Sen,<sup>15</sup> in this article, to Gdp (or 'resources') the other two dimensions of HDI are added (see next paragraph). One dimension is life expectancy, or 'longevity', which reflects a broad range of social characteristics, such as health policies and health conditions, the spread of basic hygienic infrastructures, as well as the demographic transition. These are crucial aspects of modernity, largely overlooked by Gdp; needless to say, to live a long and a healthy life should be regarded as a positive goal of every human being. Another dimension is 'knowledge', measured through education which is another remarkable characteristic of modernity, not directly accounted for by Gdp. In this sense, the present work adopts a clear-cut approach because the three dimensions of HDI are all basic (equally important) and different (not necessarily correlated) components of modernity, at least in the way it spread over the XIX and XX centuries, and thus we should consider all of them, when it comes to discuss modernization in Italian regions.

How does State intervention promote modernization in these three dimensions? A possible answer leads us to the distinction between 'active' and 'passive' modernization, which will be discussed first at the national and then at the regional level. We borrow some of the following ideas from a well-known Italian historian, Luciano Cafagna, according to whom there is an active modernization when one or more subjects – political or social actors – take up the challenge and engage in 'modernizing' a country. These actors implement a coherent strategy and are usually organized in what Antonio Gramsci called 'historic bloc':<sup>16</sup> they control key institutions (mainly the central State) and enjoy support from the prevailing ideology and cultural milieu.<sup>17</sup> Examples are not only the Liberal Italy, but also Prussia, Russia, or Japan; by this regard, active modernization

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<sup>15</sup> Sen, *Commodities and Capabilities*.

<sup>16</sup> Gramsci, *La questione*.

<sup>17</sup> Cafagna, "Modernizzazione".

can be considered as a complement to the Gerschenkron's approach on economic backwardness and catching-up.<sup>18</sup> Robert Allen has recently defined this strategy as the 'standard development model': railway construction to create a national market, tariffs to protect the infant industries, banks to finance the new enterprises, and education to speed the adoption and diffusion of technology.<sup>19</sup>

We have passive modernization when a society embarks upon some sort of modernization without the role of a dominant modernizing 'bloc': that is, without implementing a competitive strategy, but rather as a result of an adaptive-sub optimal approach. This can be the result of extractive political and economic institutions, as defined by Acemoglu and Robinson, where the elites have the interest to pursue some modernization in order to grasp the resulting extra output, yet preventing the rest of the population from taking any advantage of it.<sup>20</sup> As a consequence, passive modernization is often incomplete, and the 'standard development model' illustrated by Allen is at best only partially implemented. The main point is that, while in this latter case modernization comes from abroad as something extraneous to the local society, when there is active modernization it is the whole society which pursues the declared goals, and we have 'identification' between the elite which advocates modernization and the rest of the community. Therefore, inclusive political and economic institutions are more likely to be associated with active modernization, whereas extractive ones are typical of passive modernization.

Both kinds of modernization can be implemented either at the national, or at the regional and local level:<sup>21</sup> the role of local institutions is important insofar there are some modernization policies of which local elites are partly or entirely in charge. In some dimensions, such as resources, local institutions have probably grown in importance during the XX century, as the Third industrial revolution gave way to the ICT and post-fordist age: for instance, the role of local institutions and elites has been widely recognized by historians and economists for what concerns the rise of 'light' industrialization in the North-Eastern and Central regions, in the second half of the XX century.<sup>22</sup> Furthermore, in Italy the regions were officially created and became operative in the 1970s,<sup>23</sup> since then they have periodically enlarged their competences and duties, so much so that these may have significantly impacted upon crucial determinants of modernization, from life expectancy to income, to higher education. In other dimensions, local institutions were instead more important in the second half of the XIX century: this was the case with primary education, as we are going to see.

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<sup>18</sup> Gerschenkron, *Economic Backwardness*; id., "Reflections on Economic Aspects".

<sup>19</sup> Allen, *Global economic history*, pp. 41-2 and 114-5.

<sup>20</sup> Acemoglu, "Oligarchic"; Acemoglu and Robinson, *Why nations fail*.

<sup>21</sup> On this we have different view than Cafagna, who maintained that active modernization can occur only at the national level ("Modernizzazione", p. 237).

<sup>22</sup> The literature is vast: e.g. Bagnasco, *La costruzione*; Becattini, *Il calabrone*; Putnam, *Making Democracy Work*. See de Cecco, *L'economia di Lucignolo*, for a dissenting voice which emphasizes the role of the national State in releasing fiscal and legal checks and in currency devaluation.

<sup>23</sup> Putnam, Leonardi, and Nanetti, *La pianta e le radici*.

To sum up, we assume that at the regional level it is possible to have both active and passive modernization, and that this distinction can be a useful framework in order to understand and explain the historical pattern of Italy's regional inequality. We point out that, while active modernization took place at the national level and in the Northern and Central regions, in the Southern ones passive modernization was dominant.<sup>24</sup> This has important implications. In fact, our analysis suggests that the effectiveness of passive modernization in promoting convergence significantly changed according to the different dimensions of human development. As we are going to see, passive modernization (i.e., State intervention) was enough to bridge the gap in longevity, but it turned out to be less effective in education and even less in Gdp. What is more important, passive modernization made the economic and social system of Southern Italy comparably weaker, convergence notwithstanding, and thus more fragile to exogenous shocks.

### 3. HDI: proxies and procedures

The dream of having a synthetic proxy in order to measure the economic development of a country has a long story.<sup>25</sup> The first attempt is provided with the Physical Quality of Life Index (PQLI) already in the 1970s.<sup>26</sup> It was simply an unweighted average of basic literacy rate, infant mortality and life expectancy. However, the turning point came in 1990 when the UN published the *Human Development Report* which contained an attempt to capture, through a synthetic index, the multidimensional nature of human development.<sup>27</sup> The HDI presented by UN, which captures the three essential components of human life – longevity, knowledge and income – had a good success and shortly become very popular. In fact, in the following years several studies tried to produce the historical series of HDI for major countries<sup>28</sup> and more recent even for less developed ones.<sup>29</sup> Also the Italian series of HDI since 1870 were prepared either for macro areas either for regions.<sup>30</sup>

In 2010, on the occasion of the 20<sup>th</sup> Anniversary Edition, the UN introduced a new HDI which, also trying to respond to the criticisms,<sup>31</sup> made various changes at the previous one.<sup>32</sup> First of all, income is now measured by Gni instead of Gdp; the former (i.e., the income of all the residents, even of those living abroad: it includes international remittances and foreign aids) seems more

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<sup>24</sup> The very idea of a passive attitude of Southern Italy's elites and society towards modernization dates back to the age of the French Revolution: Vincenzo Cuoco (1770-1823), in his seminal work *Saggio Storico sulla rivoluzione di Napoli* (written in 1800), called "passive" the Naples 1799 revolution, which was brought there by the French army. In the course of the XIX century, Cuoco's definition of "passive revolution" in Southern Italy was widely accepted and extended to *Risorgimento* and Unification.

<sup>25</sup> For a complete cost-benefit analysis of using composite indices of development, and on the trade-off between 'mashup indices' and dashboard of single components, see Ravallion, "Mashup indices". For a different approach based upon the multi-criterion analysis, see Munda and Nardo, "Non-compensatory/non-linear composite indicators".

<sup>26</sup> Morris, "A physical quality of life index".

<sup>27</sup> UNDP, *Human Development Report*.

<sup>28</sup> Crafts, "The human development index: some historical comparisons;" "The human development index: some revised estimates". Prados de la Escosura, "Improving Human Development".

<sup>29</sup> Prados de la Escosura, "Human Development in Africa".

<sup>30</sup> Conte, Della Torre, and Vasta, "The Human Development Index".

<sup>31</sup> However, some criticisms on the new version of HDI are provided by Ravallion, "Troubling Tradeoffs".

<sup>32</sup> UNDP, *Human Development Report 2010*.



suitable to measure the standard of living. Secondly, proxies for education, which up to 2009 contained a combination of literacy (with a two third weight) and gross enrolment ratio in primary, secondary – first and secondary cycle – and tertiary education (with a one third weight), are now provided by combining, with same weight, the mean years of schooling and the expected years of schooling. Furthermore, minimum and maximum values were revised for life expectancy: passing from 25 and 85 years of the old version to 20 and 83.2 for the new one.

However, the most important change is the introduction of the geometric mean instead of the arithmetic mean used in the previous versions. The change in the functional form accepts the criticism to the previous form, by reducing the perfect substitutability of the three different dimensions and penalizing unbalanced development.

Although the new HDI improved considerably the previous version, for what concerns its use in historical perspective an intermediate choice seems to be more adequate. Indeed, Gidwitz et al. suggested to use an hybrid version of the two methodologies.<sup>33</sup> The ‘hybrid’ HDI is well suited to provide a long term view because it allows to better examining past progress and even because there is a large availability of data for old indicators. It combines the ‘old’ indicators, the ‘new’ maximum and minimum values or goalposts, and the new functional form being calculated as a geometric average, not an arithmetic one (for a detailed review of all sources and methods, see the Appendix).

The debate is going on. Prados de la Escosura has recently proposed a different solution: the Historical Index of Human Development (HIHD), which combines the old indicators with the geometric average (as the hybrid HDI), but assumes increasing returns for the social dimensions of the index, longevity and knowledge, thus transforming them with a convex achievement function.<sup>34</sup> Although the author offers good reasons for the assumption of increasing returns in social dimensions, here we have chosen not to use his index, because we are interested in comparing our data with the new HDI of the United Nations. In a previous article, however, an early version of Prados de la Escosura’s HIHD<sup>35</sup> has been already estimated for the Italian regions, in benchmark years from 1891 to 2001:<sup>36</sup> the use of the index reinforces our argument, since the convex achievement function tends to increase differences for higher levels of the index and, therefore, to emphasize the lack of convergence of Southern Italy in the last decades.

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<sup>33</sup> Gidwitz, Heger, Pineda, Rodríguez, “Understanding Performance in Human Development”.

<sup>34</sup> The new goalposts have also been accepted, with some modifications due to the use of the convex function. Prados de la Escosura, “World Human Development”.

<sup>35</sup> The so-called Improved Human Development Index (IHDI). Prados de la Escosura, “Improving Human Development”. Differences between IHDI and HIHD are limited to minor variations in the goalposts.

<sup>36</sup> Felice, “I divari regionali in Italia”.

#### 4. HDI: putting Italy and his macro regions in comparative perspective

Since we adopt a long term perspective, we have decided to calculate the hybrid HDI for Italy and for the Italian regions, employing our new estimates. Thus, in Table 1 we can compare our results with a large sample of countries, by using data provided by Leandro Prados de la Escosura.<sup>37</sup> By a simple look at the background colors of the Table we can easily find a general convergence within different countries. Indeed, we have colored the Table from a lighter to darker according to the different levels of HDI reached (white up to the threshold of 0.5, light gray from 0.5 to 0.8 and dark gray over 0.8).<sup>38</sup> Finally, we have emphasized in white color the values which passed the threshold of 0.9, considering this latter the entrance in the sphere of the very high level of development. With respect to the global framework, a general convergence process emerges, being the less developed countries in the late XIX century faster than the most advanced countries for the entire period. However, the story is more complicated and part of this convergence is probably due to the upper limit of the index.

*Table 1. Hybrid Human Development Index for developed countries (1870-2007)*

Countries	1870	1880	1890	1900	1913	1929	1938	1950	1960	1970	1980	1990	2000	2007
Australia	0.491	0.552	0.570	0.602	0.641	0.679	0.700	0.746	0.785	0.809	0.833	0.868	0.934	0.953
Austria	0.340	0.380	0.428	0.471	0.514	0.602	0.630	0.671	0.727	0.780	0.821	0.860	0.910	0.927
Belgium	0.438	0.467	0.486	0.522	0.556	0.610	0.643	0.668	0.749	0.771	0.832	0.870	0.921	0.931
Canada	0.432	0.456	0.497	0.539	0.604	0.675	0.683	0.748	0.800	0.846	0.860	0.913	0.928	0.950
Denmark	0.470	0.473	0.513	0.560	0.600	0.640	0.661	0.710	0.755	0.791	0.851	0.870	0.917	0.936
Finland	0.190	0.216	0.268	0.340	0.402	0.527	0.600	0.676	0.735	0.766	0.829	0.878	0.917	0.940
France	0.405	0.439	0.491	0.512	0.552	0.605	0.637	0.684	0.757	0.789	0.838	0.878	0.917	0.939
Germany	0.432	0.454	0.499	0.544	0.576	0.628	0.673	0.672	0.736	0.785	0.824	0.853	0.900	0.913
Greece	0.248	0.277	0.301	0.329	0.351	0.459	0.527	0.553	0.634	0.730	0.787	0.823	0.849	0.907
Ireland	0.373	0.420	0.455	0.486	0.535	0.588	0.602	0.653	0.711	0.754	0.790	0.838	0.908	0.952
Italy	<b>0.282</b>	<b>n.a.</b>	<b>0.360</b>	<b>n.a.</b>	<b>0.442</b>	<b>0.546</b>	<b>0.582</b>	<b>0.631</b>	<b>0.709</b>	<b>0.778</b>	<b>0.817</b>	<b>0.850</b>	<b>0.883</b>	<b>0.899</b>
Japan	0.210	0.279	0.317	0.380	0.428	0.491	0.533	0.591	0.701	0.780	0.851	0.883	0.913	0.932
Netherlands	0.444	0.480	0.517	0.559	0.603	0.678	0.685	0.735	0.768	0.798	0.849	0.884	0.926	0.940
New Zealand	0.496	0.564	0.573	0.613	0.658	0.691	0.708	0.758	0.793	0.820	0.825	0.850	0.908	0.929
Norway	0.466	0.481	0.514	0.535	0.577	0.628	0.669	0.712	0.759	0.793	0.851	0.880	0.937	0.956
Portugal	0.224	0.247	0.285	0.291	0.313	0.350	0.398	0.469	0.561	0.654	0.725	0.794	0.867	0.878
Spain	0.246	0.269	0.302	0.332	0.376	0.489	0.490	0.565	0.659	0.755	0.804	0.852	0.897	0.922
Sweden	0.424	0.459	0.488	0.518	0.579	0.607	0.636	0.707	0.760	0.798	0.846	0.868	0.931	0.941
Switzerland	0.464	0.496	0.539	0.569	0.589	0.654	0.679	0.720	0.778	0.790	0.853	0.874	0.911	0.925
Turkey	0.088	0.100	0.116	0.131	0.148	0.208	0.275	0.363	0.437	0.541	0.584	0.658	0.723	0.769
UK	0.449	0.479	0.514	0.547	0.605	0.641	0.664	0.730	0.770	0.797	0.820	0.853	0.906	0.923
USA	0.463	0.459	0.514	0.558	0.591	0.677	0.707	0.765	0.799	0.838	0.865	0.901	0.931	0.945

Sources: Prados de la Escosura, "Improving Human Development," "Private correspondence," and for Italy our own data. Note: For Italy the benchmark years used are: 1871, 1891, 1911, 1931, 1938, 1951, 1961, 1971, 1981, 1991, 2001, and 2007.

<sup>37</sup> Prados de la Escosura, "Private correspondence". We gratefully thank Leandro Prados de la Escosura for sharing with us his dataset.  
<sup>38</sup> It must be said that the use of thresholds has been criticized. See for example Wolff, Chong, and Auffhammer, "Classification, Detection and Consequences".

From the Table, we can have interesting information on the Italian long-run performance. In 1871, Italy had a very large gap with most of the other countries of the sample. This gap was large, although less wide, even in 1931, when Italy reached the 0.5 threshold. By 1981, when the threshold of 0.8 was achieved, the gap with other countries was reduced considerably. As far as the backwardness of Italian development in comparison with UK is concerned, we can observe as Italy reached the 1870 UK level only in 1911, with a delay of more than forty years. This interval reduced later on and Italy reached the 1929 UK level in 1951, with a delay of twenty-two years. During the Golden age, this gap decreased significantly and already in the 1970 the two countries are very close. Thus, by considering the absolute value of the index there is a general convergence towards the leading countries, although in the last years this process seems to proceed slower; for example, Italy is one of the few countries, with Portugal and Turkey, that have not overcome, in 2007, the threshold of 0.9.

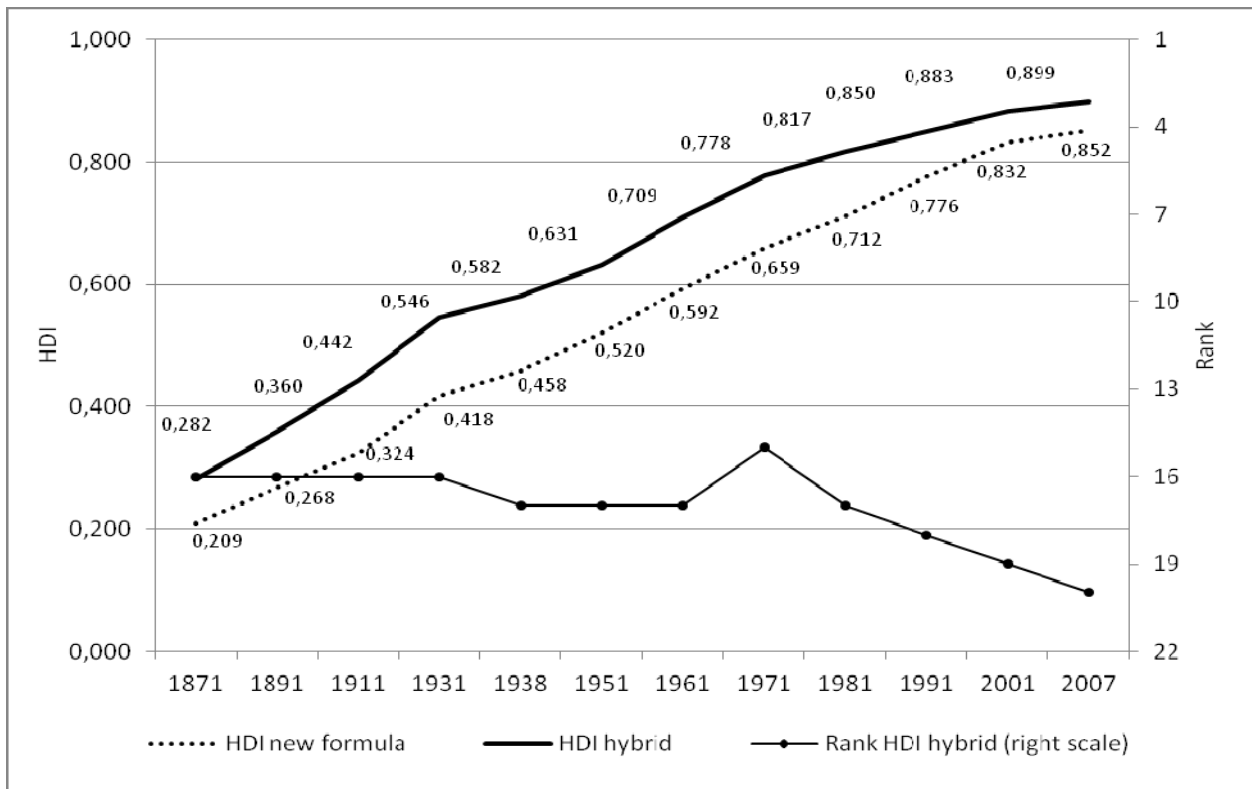
Figure 1, where we have computed the new HDI and the hybrid HDI, allows us to better clarify what we have shown above. If the growth of the values for both indices is clear and even considerable, this growth does not allow Italy to improve its position in the ranking of the countries of the sample. Italy started as 16<sup>th</sup> in the ranking in 1871 and reached the highest position (15<sup>th</sup>) of her pattern in 1971 at the end of the Golden age, but at the beginning of the new century is placed 21<sup>st</sup> in the ranking, having lost five positions in comparison with 1871.

Although the issue of Italian performance is beyond the aim of this paper, which focuses mainly on the Italian regional divide, we can add some suggestions to this topic. First of all it is clear that measuring the best performer countries in HDI in the long run is quite a difficult task. Following Gidwitz et al.,<sup>39</sup> it is possible to use different methods ranging from: *i*) the absolute change of the value; *ii*) the country's deviation from its expected performance given its initial level; *iii*) the rate of growth of the value; and *iv*) the shortfall reduction (henceforth SRM). The latter method measures the fall in the gap between a country's initial level and the upper limit. It reflects the effort to close the gap with the highest possible value (1) by assuming that a given percentage of reduction is equally viable at different initial levels of development. For example, going from a value of 0.900 to a 0.950 means that there is a 50 percent reduction of the shortfall, i.e., the same if the value passes from 0.500 to 0.750. Conversely, if we use the growth rate method (*iii*) the two cases are 5.5 percent for the former versus a 50 percent for the latter. Thus, the last two methods, the SRM and the rate of growth, produce different results. Indeed, the two methods are not neutral since they are biased towards less developed countries (growth rate) or towards most advanced ones (SRM).

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<sup>39</sup> Gidwitz, Heger, Pineda, Rodríguez, "Understanding Performance in Human Development".

Figure 1. Different measures of Human Development (Italy 1871-2007)



Sources: our elaborations from Table 1.

In Table 2 we compare the different performances for countries in different phases, according to the two methods. Considering the rate of growth, Italy presents for the entire period (1870-2007) a growth of 1.6% per year of the hybrid HDI, which is the 7<sup>th</sup> results of the whole sample, after Turkey, Finland, Japan, Portugal, Spain, and Greece. By using the SRM, however, the situation appears considerably different, ranking the Italian SRM for the entire period (85.9) among the lowest. This discrepancy is obviously due to the features of the methods, since Italy is a latecomer country at the beginning of the period and thus performing better in terms of growth rate.

When looking at the different phases for both methods, we have further information. Given the characteristics of the two methods, it is of course incorrect to compare, with a single method, the performance of each country in different phases. Certainly, according to the growth rate method the faster period is the Liberal age (1870-1913), while for SRM is the last period (1971-2007). If we make the comparisons amongst countries within the same period, which is the correct way, we have some interesting even if sometime divergent results. Summing up, we can say that Italian performance in hybrid HDI presents a good dynamic in comparison with other developed countries up to the 1971. If in the Liberal age (1870-1913), Italy is amongst the best performers only for the growth rate method, in the following two periods Italy is one of the best performers for

both methods. It is particularly interesting to observe that in the Interwar period (1913-1938) Italy is ranked in the 4<sup>th</sup> position amongst the entire sample, according to both methods. However, in the last period (1970-2007) the picture changes significantly, being the Italian performance one of the lowest for both methods. This is coherent with the position in the hybrid HDI ranking, which worsens considerably in the last period as shown in Figure 1.

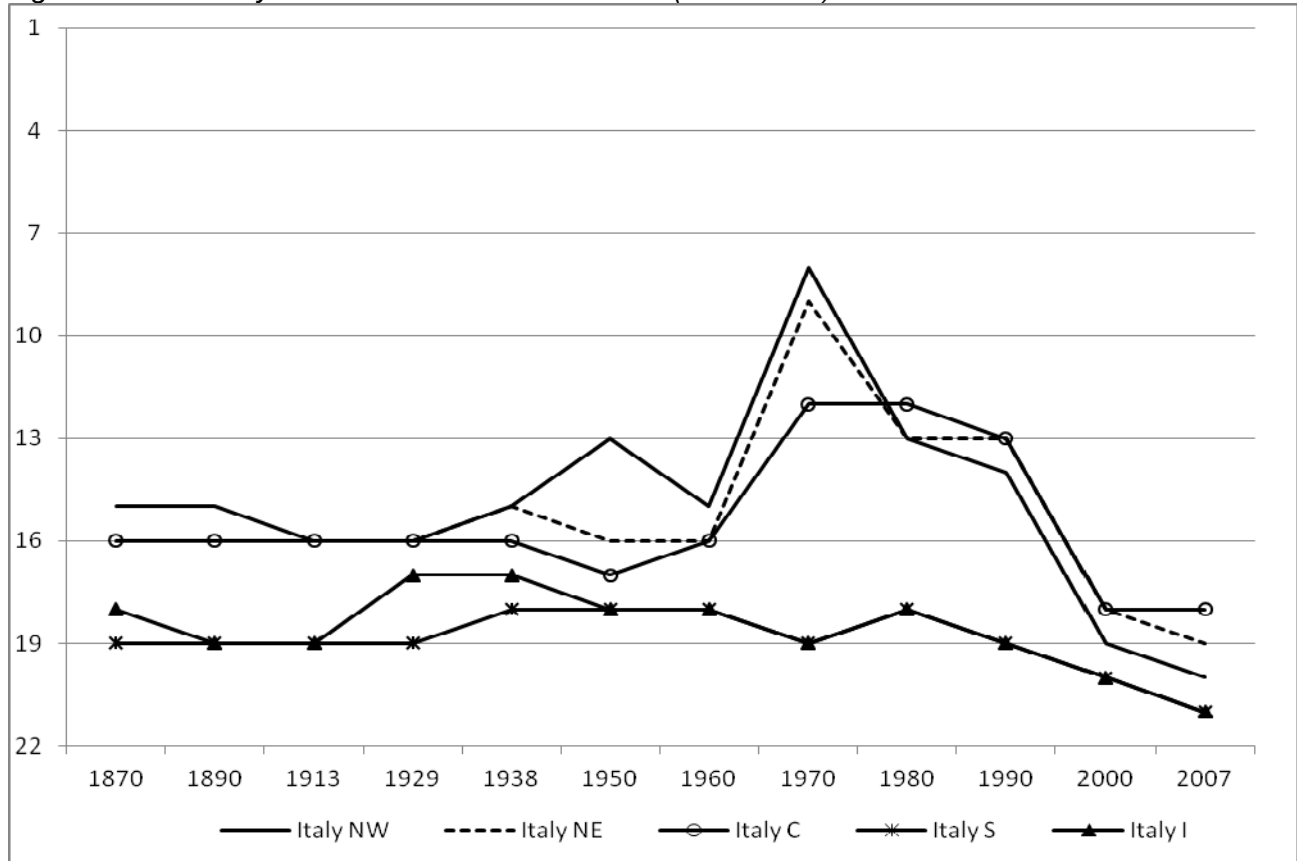
*Table 2. SRM and annual growth rate of hybrid HDI for selected countries (1870-2007)*

Countries	1870-2007		1870-1913		1913-1938		1938-1970		1970-2007	
	SRM	Annual growth rate	SRM	Annual growth rate	SRM	Annual growth rate	SRM	Annual growth rate	SRM	Annual growth rate
<b>Australia</b>	90.74	0.69	29.54	0.71	16.50	0.37	36.31	0.49	75.29	0.48
<b>Austria</b>	88.94	1.26	26.35	1.19	23.88	0.90	40.67	0.75	66.76	0.51
<b>Belgium</b>	87.69	0.82	20.98	0.63	19.74	0.63	35.84	0.62	69.74	0.56
<b>Canada</b>	91.13	0.88	30.36	0.93	19.79	0.52	51.39	0.75	67.34	0.33
<b>Denmark</b>	87.95	0.72	24.51	0.64	15.20	0.41	38.38	0.62	69.44	0.50
<b>Finland</b>	92.64	2.88	26.11	2.59	33.13	1.97	41.64	0.87	74.47	0.61
<b>France</b>	89.67	0.96	24.57	0.84	18.98	0.62	41.83	0.75	70.95	0.51
<b>Germany</b>	84.67	0.81	25.24	0.77	22.98	0.68	34.34	0.52	59.44	0.44
<b>Greece</b>	87.66	1.94	13.74	0.97	27.14	2.00	42.86	1.20	65.64	0.66
<b>Ireland</b>	92.31	1.13	25.80	1.01	14.44	0.50	38.15	0.79	80.42	0.71
<b>Italy</b>	<b>85.93</b>	<b>1.60</b>	<b>22.28</b>	<b>1.32</b>	<b>25.09</b>	<b>1.27</b>	<b>46.89</b>	<b>1.05</b>	<b>54.50</b>	<b>0.42</b>
<b>Japan</b>	91.44	2.51	27.58	2.41	18.36	0.98	52.86	1.45	69.30	0.53
<b>Netherlands</b>	89.24	0.82	28.57	0.83	20.76	0.55	35.95	0.52	70.31	0.48
<b>New Zealand</b>	85.82	0.64	32.11	0.76	14.64	0.30	38.37	0.49	60.28	0.36
<b>Norway</b>	91.77	0.77	20.78	0.55	21.79	0.64	37.37	0.58	78.78	0.56
<b>Portugal</b>	84.33	2.13	11.48	0.92	12.27	1.07	42.53	2.01	64.88	0.93
<b>Spain</b>	89.64	2.00	17.18	1.22	18.26	1.21	52.02	1.69	68.11	0.60
<b>Sweden</b>	89.81	0.89	26.88	0.85	13.47	0.39	44.68	0.80	70.88	0.48
<b>Switzerland</b>	86.04	0.73	23.29	0.63	22.01	0.62	34.42	0.51	64.41	0.46
<b>Turkey</b>	74.62	5.64	6.55	1.58	14.87	3.43	36.76	3.04	49.54	1.14
<b>UK</b>	85.97	0.77	28.37	0.81	14.91	0.39	39.53	0.63	61.93	0.43
<b>USA</b>	89.75	0.76	23.99	0.65	28.21	0.78	44.86	0.58	65.93	0.34

Sources: our elaborations from Table 1.

In order to introduce the differences amongst the Italian regions, which is the main aim of this paper, we have compared one at the time the rank of each of the five Italian macro-areas with the entire sample of the developed countries but Italy (Figure 2); furthermore, in Table 3 all the Hybrid HDI values for Italy and the five macro areas, which will be illustrated in details later, are presented.

Figure 2. Rank of hybrid HDI for Italian macro area (1870-2007)



Sources: our own elaboration.

From Figure 2, we can observe as the patterns of the five macro areas display important differences. First of all, we can see that the South and the Islands follow more or less the same path and they both remain at the bottom of the ranking for the entire period. Instead the other three macro areas have a different pattern: they are in better position since the first years after Unification and they have reached a position close to the mid of the ranking by 1970, being North-Western regions ranked 8<sup>th</sup>, the North-Eastern ones 9<sup>th</sup> and the Central 12<sup>th</sup> amongst the sample considered. Finally, we can observe as in the later years there is a general convergence towards the bottom of the ranking of the various macro areas, which fluctuate between the 18<sup>th</sup> and the 21<sup>st</sup> position: this decline is due not only to sluggish growth of GDP since the early 1990s,<sup>40</sup> but also to a remarkable falling back in the total enrolment ratio, which heavily affected the Italian Centre-North in the last decades<sup>41</sup> and has been part of a wider deterioration in Italy's human capital when compared to other advanced countries.<sup>42</sup> From Table 3, we can see how the Southern regions and the Island had always a lag in reaching the thresholds above illustrated.

<sup>40</sup> Felice and Vecchi, "Italy".

<sup>41</sup> See table A.5 in the Appendix. For international comparisons, see UNESCO Institute for Statistics, *Correspondence*.

<sup>42</sup> Nuvolari and Vasta, "The Ghost".

*Table 3. Hybrid HDI for Italian macro area (1870-2007)*

Area	1871	1891	1911	1931	1938	1951	1961	1971	1981	1991	2001	2007
<b>Italy</b>	0.282	0.360	0.442	0.546	0.582	0.631	0.709	0.778	0.817	0.850	0.883	0.899
<b>Italy NW</b>	0.359	0.439	0.498	0.578	0.623	0.672	0.734	0.793	0.827	0.854	0.889	0.904
<b>Italy NE</b>	0.298	0.397	0.487	0.572	0.611	0.655	0.724	0.792	0.827	0.861	0.897	0.911
<b>Italy C</b>	0.271	0.372	0.472	0.562	0.600	0.640	0.715	0.788	0.830	0.865	0.897	0.914
<b>Italy S</b>	0.222	0.286	0.370	0.487	0.529	0.574	0.671	0.750	0.794	0.830	0.861	0.877
<b>Italy I</b>	0.231	0.287	0.372	0.495	0.540	0.573	0.668	0.748	0.794	0.831	0.863	0.878

Sources: our own elaboration.

The analysis of Table 4 offers further information on the different performances of the five macro areas, according to the two different methods described above. For the entire period (1871-2007), according to the growth rate method the Southern regions and the Islands present higher values than the average; while according to the SRM method they score lower values. This is what expected, after all, given the biases of the two methods we have mentioned, that is towards less developed areas for the growth rate and towards most advanced ones for SRM. When we consider the sub-periods, however, not all the expected results come up. During the Liberal age (1871-1911), the Central regions have the best performance for both growth rate and SRM; conversely, in this period Southern regions have good performance for growth rate but very poor if we look at SRM. For the interwar period, the results are clearer: Southern regions and Islands have higher values in comparison to the other regions for both growth rate and SRM. With the increase in the HDI level, in the last period (1971-2007) the rate of growth becomes very slow: as a consequence, the differences among regions reduce considerably but the Southern regions are still leading. At the meantime, using the SRM method, the Central regions, and even the North-Eastern ones, present the best performance, being able to increase their HDI levels even if they start from high ones.

*Table 4. SRM and annual growth rate of Hybrid HDI for Italian macro area (1871-2007)*

Area	1871-2007		1871-1911		1911-1938		1938-1971		1971-2007	
	SRM	Growth rate	SRM	Growth rate	SRM	Growth rate	SRM	Growth rate	SRM	Growth rate
<b>Italy</b>	85.9	1.60	22.3	1.32	25.1	1.27	46.9	1.05	54.5	0.42
<b>Italy NW</b>	85.0	1.11	21.7	0.90	24.9	1.00	45.1	0.85	53.6	0.38
<b>Italy NE</b>	87.3	1.50	26.9	1.47	24.2	1.02	46.5	0.93	57.2	0.41
<b>Italy C</b>	88.2	1.73	27.6	1.72	24.2	1.08	47.0	0.98	59.4	0.43
<b>Italy S</b>	84.2	2.15	19.0	1.55	25.2	1.72	46.9	1.31	50.8	0.46
<b>Italy I</b>	84.1	2.04	18.3	1.42	26.8	1.81	45.2	1.20	51.6	0.47

Sources: our own elaboration.

To sum up, the performance of the South and Islands looks by no means disappointing in the Liberal age, whereas it is undoubtedly positive in the interwar years. The performance of the Central regions and, to some degree, of the North-Eastern ones is instead better in the Liberal

age, and, to a minor extent, in the last period. The performance of the North-Western regions is instead below average throughout the period.

## **5. The hybrid HDI and its components: regional estimates**

This section introduces and discusses our original new regional estimates on hybrid HDI. Firstly we present the series of the HDI for all Italian regions and compare their level with the main developed countries (§ 5.1). Secondly, we will analyse the dynamic of each single component (longevity, education and resources) of the HDI (§§ 5.2-5.4).

### *5.1. The hybrid HDI*

Table 5 presents regional estimates of the hybrid HDI for benchmark years from 1871 to 2007 (for details on the methodology, see the Appendix). Around 1871, in HDI the leading Italian region was Piedmont, with an index (0.38) relatively high also by international standards: lower than France or Germany, but higher than Austria (see again Table 1). Conversely, the less developed Italian region, Calabria (0.19), with an index barely a half the one of Piedmont, was below any European country, except Finland, and even below Japan. As a whole, around the time of Unification Southern Italy was considerably backward, scoring a HDI comparable to the one of Portugal, and below Spain and Greece.

By the eve of WWI, only two Italian regions, Piedmont and Liguria, had been able to pass the 0.5 threshold: the lag to UK was about twenty years, i.e. one generation; significantly, Lombardy was still below the threshold, and indeed even below Veneto and Emilia in the North-Eastern, and Latium in the Centre. The less developed Italian region still was Calabria, together with Lucania, but now this was considerably better than Portugal, and close to Greece. Southern Italy as a whole had improved its ranking, being very close to Spain, and above Greece. During the interwar years, almost all of the Italian regions, with the exception of Lucania, passed the 0.5 threshold: first, of course, those in the North-Eastern and the Centre, plus Lombardy. At the eve of WWII, the leading Italian region was Liguria, which scored a HDI index (0.65) higher than France and similar to UK. Southern Italy (0.53) was above Greece, Spain and Portugal, still at the same level of Japan, and almost twice Turkey. This was by no means a success story.



*Table 5. The new Hybrid HDI for Italy's regions, 1871-2007*

<b>Regions</b>	<b>1871</b>	<b>1891</b>	<b>1911</b>	<b>1931</b>	<b>1938</b>	<b>1951</b>	<b>1961</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2007</b>
Piedmont	0.380	0.457	0.517	0.582	0.625	0.677	0.734	0.793	0.828	0.855	0.888	0.900
Aosta Valley						0.651	0.732	0.781	0.817	0.833	0.867	0.898
Liguria	0.346	0.436	0.514	0.605	0.648	0.698	0.747	0.802	0.826	0.853	0.886	0.899
Lombardy	0.347	0.435	0.482	0.568	0.614	0.664	0.730	0.791	0.826	0.854	0.890	0.906
<b>North-West</b>	<b>0.359</b>	<b>0.439</b>	<b>0.498</b>	<b>0.578</b>	<b>0.623</b>	<b>0.672</b>	<b>0.734</b>	<b>0.793</b>	<b>0.827</b>	<b>0.854</b>	<b>0.889</b>	<b>0.904</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	0.597	0.639	0.651	0.717	0.780	0.806	0.846	0.890	0.901
Veneto	0.318	0.412	0.488	0.561	0.603	0.650	0.722	0.789	0.823	0.860	0.891	0.907
Friuli	n.a.	n.a.	n.a.	0.596	0.622	0.676	0.718	0.787	0.821	0.857	0.896	0.910
Emilia	0.273	0.374	0.485	0.573	0.611	0.657	0.730	0.800	0.839	0.866	0.905	0.918
<b>North-East</b>	<b>0.298</b>	<b>0.397</b>	<b>0.487</b>	<b>0.572</b>	<b>0.611</b>	<b>0.655</b>	<b>0.724</b>	<b>0.792</b>	<b>0.827</b>	<b>0.861</b>	<b>0.897</b>	<b>0.911</b>
Tuscany	0.273	0.377	0.472	0.580	0.617	0.642	0.706	0.789	0.829	0.859	0.895	0.911
The Marches	0.256	0.338	0.434	0.533	0.582	0.622	0.706	0.783	0.834	0.871	0.903	0.914
Umbria	0.272	0.346	0.442	0.554	0.596	0.618	0.703	0.783	0.825	0.859	0.893	0.906
Latium	0.264	0.398	0.486	0.552	0.588	0.648	0.727	0.789	0.828	0.869	0.898	0.917
<b>Centre</b>	<b>0.271</b>	<b>0.372</b>	<b>0.472</b>	<b>0.562</b>	<b>0.600</b>	<b>0.640</b>	<b>0.715</b>	<b>0.788</b>	<b>0.830</b>	<b>0.865</b>	<b>0.897</b>	<b>0.914</b>
<b>North-East, Centre</b>	<b>0.285</b>	<b>0.385</b>	<b>0.480</b>	<b>0.567</b>	<b>0.606</b>	<b>0.648</b>	<b>0.720</b>	<b>0.790</b>	<b>0.829</b>	<b>0.863</b>	<b>0.898</b>	<b>0.913</b>
Abruzzi	0.217	0.277	0.385	0.504	0.543	0.572	0.679	0.767	0.813	0.853	0.888	0.901
Campania	0.241	0.306	0.375	0.504	0.545	0.590	0.677	0.748	0.789	0.827	0.857	0.874
Apulia	0.215	0.286	0.364	0.474	0.518	0.579	0.673	0.756	0.798	0.836	0.858	0.875
Lucania	0.200	0.259	0.348	0.450	0.491	0.505	0.646	0.737	0.785	0.818	0.862	0.873
Calabria	0.195	0.249	0.348	0.460	0.507	0.545	0.653	0.733	0.784	0.813	0.855	0.871
<b>South</b>	<b>0.222</b>	<b>0.286</b>	<b>0.370</b>	<b>0.487</b>	<b>0.529</b>	<b>0.574</b>	<b>0.671</b>	<b>0.750</b>	<b>0.794</b>	<b>0.830</b>	<b>0.861</b>	<b>0.877</b>
Sicily	0.233	0.284	0.366	0.495	0.536	0.569	0.661	0.741	0.791	0.826	0.859	0.873
Sardinia	0.216	0.302	0.393	0.498	0.554	0.590	0.689	0.768	0.804	0.844	0.875	0.891
<b>Islands</b>	<b>0.231</b>	<b>0.287</b>	<b>0.372</b>	<b>0.495</b>	<b>0.540</b>	<b>0.573</b>	<b>0.668</b>	<b>0.748</b>	<b>0.794</b>	<b>0.831</b>	<b>0.863</b>	<b>0.878</b>
<b>South and Islands</b>	<b>0.226</b>	<b>0.286</b>	<b>0.370</b>	<b>0.490</b>	<b>0.533</b>	<b>0.574</b>	<b>0.671</b>	<b>0.749</b>	<b>0.794</b>	<b>0.831</b>	<b>0.862</b>	<b>0.877</b>
<b>Centre-North</b>	<b>0.319</b>	<b>0.411</b>	<b>0.490</b>	<b>0.572</b>	<b>0.614</b>	<b>0.659</b>	<b>0.726</b>	<b>0.792</b>	<b>0.828</b>	<b>0.860</b>	<b>0.894</b>	<b>0.909</b>
<b>Italy</b>	<b>0.282</b>	<b>0.360</b>	<b>0.442</b>	<b>0.546</b>	<b>0.582</b>	<b>0.631</b>	<b>0.709</b>	<b>0.778</b>	<b>0.817</b>	<b>0.850</b>	<b>0.883</b>	<b>0.899</b>

Sources and notes: our elaborations (see the Appendix). From 1871 to 1938, Aosta Valley is included in Piedmont.

At the end of the economic miracle, in 1971, we find two regions above the 0.8 threshold: Liguria in the North-Western and, for the first time, a North-Eastern region, Emilia. By 1971, among the most advanced countries the same threshold had been passed only by the four Western offshoots (Canada, US, New Zealand, and Australia); thus, the most advanced Italian regions were now above any other European country. Southern Italy also had improved, and yet this time at the international level some other countries had done better, namely Spain, which had overcome Southern Italy during the 1960s, and Japan; all considered, however, the picture in the South was still rosy: the less developed Italian regions still were Lucania and Calabria (0.74 and 0.73 respectively), both of them above Greece and Portugal.

It is in the last decades that things get worse, for the whole Italy and for its regions. At the turn of the new millennium, two regions have overcome the 0.9 threshold, Emilia (0.905) and Marches (0.903), both in the North-Eastern/Centre. Around the same time, in 2000, as much as 16 out of the 22 countries from Table 1 have overcome the 0.9 threshold: now, Italy is clearly lagging behind. By 2007, although roughly half of the Italian regions have overcome the 0.9 threshold, Italy is still below the threshold, unlike all the countries from Table 1 except Portugal and Turkey. The reason of course were South and Islands, which now were, again as in 1871, around the

same level as Portugal. Indeed, by 2007 only one Southern region, Abruzzi, which had taken the lead in the South as early as 1911, had been able to reach the 0.9 threshold. It should be noticed that also Liguria, the leading region as late as 1971, was now below the threshold.

Table 6 presents the estimates from Table 5, which we have discussed thus far, as a ratio to the Italian average, in order to highlight the process of convergence towards, or divergence from, Italy.

*Table 6. Italy's regional inequality in the new Hybrid HDI, 1871-2001 (Italy=1)*

<b>Regions</b>	<b>1871</b>	<b>1891</b>	<b>1911</b>	<b>1931</b>	<b>1938</b>	<b>1951</b>	<b>1961</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2007</b>
Piedmont	1.345	1.270	1.172	1.067	1.074	1.072	1.034	1.018	1.013	1.006	1.005	1.001
Aosta Valley						1.031	1.032	1.004	1.000	0.980	0.982	1.000
Liguria	1.226	1.212	1.165	1.108	1.115	1.106	1.053	1.031	1.011	1.003	1.003	1.000
Lombardy	1.231	1.208	1.092	1.041	1.056	1.052	1.029	1.017	1.011	1.005	1.007	1.009
<b>North-West</b>	<b>1.271</b>	<b>1.222</b>	<b>1.128</b>	<b>1.060</b>	<b>1.071</b>	<b>1.066</b>	<b>1.034</b>	<b>1.019</b>	<b>1.012</b>	<b>1.005</b>	<b>1.006</b>	<b>1.006</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	1.094	1.098	1.032	1.011	1.002	0.987	0.996	1.008	1.003
Veneto	1.126	1.145	1.106	1.028	1.038	1.030	1.018	1.014	1.007	1.012	1.009	1.009
Friuli	n.a.	n.a.	n.a.	1.092	1.070	1.071	1.013	1.012	1.004	1.008	1.015	1.012
Emilia	0.966	1.041	1.098	1.051	1.051	1.042	1.029	1.029	1.027	1.019	1.025	1.021
<b>North-East</b>	<b>1.057</b>	<b>1.103</b>	<b>1.104</b>	<b>1.047</b>	<b>1.051</b>	<b>1.039</b>	<b>1.020</b>	<b>1.018</b>	<b>1.013</b>	<b>1.013</b>	<b>1.016</b>	<b>1.013</b>
Tuscany	0.967	1.048	1.068	1.064	1.061	1.017	0.995	1.014	1.015	1.011	1.013	1.013
The Marches	0.909	0.940	0.984	0.977	1.001	0.986	0.995	1.006	1.021	1.025	1.022	1.017
Umbria	0.965	0.962	1.001	1.014	1.025	0.979	0.991	1.006	1.009	1.010	1.011	1.008
Latium	0.937	1.107	1.101	1.012	1.012	1.027	1.025	1.013	1.014	1.022	1.017	1.021
<b>Centre</b>	<b>0.962</b>	<b>1.033</b>	<b>1.070</b>	<b>1.029</b>	<b>1.032</b>	<b>1.014</b>	<b>1.008</b>	<b>1.012</b>	<b>1.015</b>	<b>1.018</b>	<b>1.016</b>	<b>1.017</b>
<b>North-East, Centre</b>	<b>1.009</b>	<b>1.070</b>	<b>1.087</b>	<b>1.038</b>	<b>1.043</b>	<b>1.027</b>	<b>1.015</b>	<b>1.015</b>	<b>1.014</b>	<b>1.016</b>	<b>1.016</b>	<b>1.015</b>
Abruzzi	0.768	0.770	0.871	0.924	0.933	0.906	0.958	0.985	0.995	1.004	1.006	1.003
Campania	0.855	0.850	0.848	0.924	0.937	0.935	0.955	0.961	0.965	0.973	0.970	0.973
Apulia	0.761	0.796	0.823	0.868	0.890	0.917	0.949	0.972	0.976	0.983	0.971	0.973
Lucania	0.710	0.720	0.789	0.825	0.844	0.800	0.911	0.948	0.961	0.963	0.976	0.972
Calabria	0.693	0.693	0.789	0.844	0.871	0.864	0.921	0.942	0.960	0.957	0.968	0.970
<b>South</b>	<b>0.787</b>	<b>0.794</b>	<b>0.839</b>	<b>0.892</b>	<b>0.909</b>	<b>0.909</b>	<b>0.947</b>	<b>0.964</b>	<b>0.971</b>	<b>0.977</b>	<b>0.975</b>	<b>0.976</b>
Sicily	0.827	0.789	0.830	0.906	0.922	0.901	0.932	0.952	0.967	0.972	0.972	0.971
Sardinia	0.766	0.841	0.889	0.913	0.953	0.936	0.971	0.987	0.984	0.993	0.991	0.992
<b>Islands</b>	<b>0.819</b>	<b>0.799</b>	<b>0.841</b>	<b>0.908</b>	<b>0.929</b>	<b>0.909</b>	<b>0.942</b>	<b>0.961</b>	<b>0.971</b>	<b>0.977</b>	<b>0.977</b>	<b>0.977</b>
<b>South and Islands</b>	<b>0.800</b>	<b>0.797</b>	<b>0.839</b>	<b>0.897</b>	<b>0.916</b>	<b>0.909</b>	<b>0.946</b>	<b>0.963</b>	<b>0.971</b>	<b>0.977</b>	<b>0.976</b>	<b>0.976</b>
<b>Centre-North</b>	<b>1.131</b>	<b>1.142</b>	<b>1.109</b>	<b>1.048</b>	<b>1.055</b>	<b>1.044</b>	<b>1.024</b>	<b>1.018</b>	<b>1.013</b>	<b>1.011</b>	<b>1.012</b>	<b>1.012</b>
<b>Italy</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>

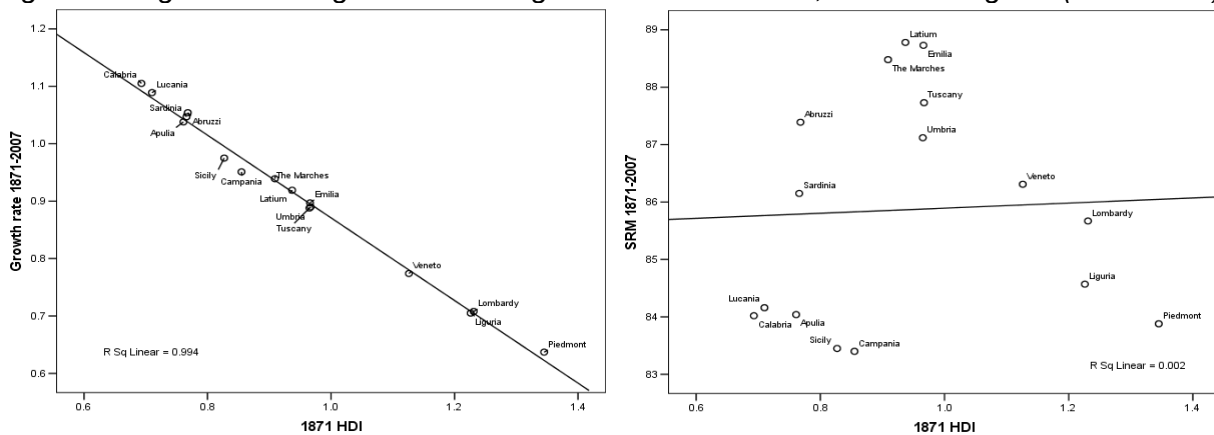
Sources: our elaborations from previous Table.

Broadly speaking, we can observe that convergence in the South was at work throughout the century after Unification; in the following three decades it significantly slowed down, but continued nonetheless. It is also worth noticing that already in 1971 the North-Eastern and Central regions had reached the North-Western ones; since the last decades of the XX century, the former had firmly taken the lead in human development. On the whole, we record an impressive process of convergence, much stronger in the North-Eastern and Central regions, than in the Southern ones.

Over the long-run, convergence is confirmed by the left quadrant of Figure 3, which displays the correlation between the initial level of HDI (in 1871) and the average growth rate of the index, for the entire period 1871-2007: the negative slope of the curve (i.e., the regions with low HDI grew more) has an  $R^2$  of 0.994, which is by no means an impressive result in terms of

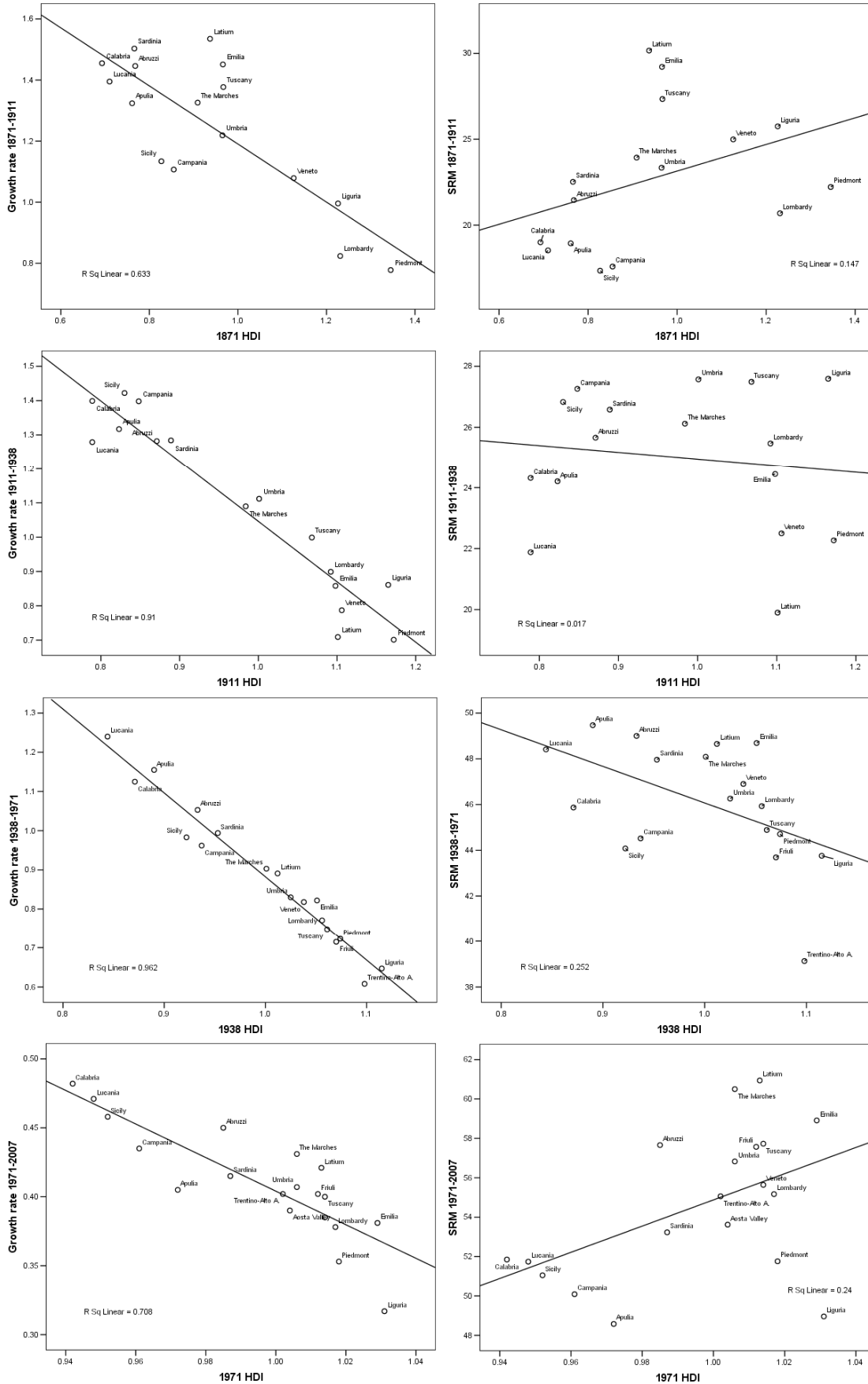
unconditional convergence. If we consider the alternative SRM method (right quadrant of Figure 3), however, the picture is much more puzzling: the curve is now slightly positive, which means a lack of convergence, furthermore the regional variance around the expected trend is huge, with a very low  $R^2$ . Indeed, the results from the two methods could hardly look more different. According to the SRM method, we could argue that, in terms of patterns in human development, there are as many as “three” Italies. One Italy is made up of the North-Western regions, with a high initial HDI and a growth lower than what expected, given the average (slightly positive) correlation between the initial level and the growth rate. The second Italy is the bulk of the Southern regions, scoring a low initial HDI but also a disappointing growth over the long-run. Finally, there are the North-Eastern and Central regions, with an average initial level of HDI and a growth rate much higher than what expected: this is true in particular for the Central regions (Toscana, the Marches, Umbria, Latium), plus Emilia, which are the big winners; two Southern regions, Sardinia and above all Abruzzi, are also relatively close to this group, whereas the biggest North-Eastern region, Veneto, lies in between the Central regions and the North-Western ones.

*Figure 3. Regional convergence according to different methods, over the long-run (1871-2009)*



Sources: our elaborations from Table 5.

Figure 4. Regional convergence according to different methods, by sub-periods



Sources: our elaborations from Table 5.

The dichotomy between the two methods is clear over the long-run, but is not always present when considering the sub-periods. In Figure 4, we can observe that also according to the SRM method there was convergence in the interwar years (1911-1938) and during the economic miracle (1938-1971). Conversely, according to SRM divergence was at work during the Liberal age (1871-1911), when we have a picture not far from the 1871-2007 one, and then, even more strongly, in the last decades. Of course, the alternative growth rate method reports convergence in all the sub-periods, although less pronounced in the first and fourth one. It is worth anticipating that the strong catching-up of the years from WWI to the 1970s is not unique of Southern Italy. Indeed, roughly for the same period Prados de la Escosura has found similar evidence for the convergence of most of the world periphery towards OECD countries.<sup>43</sup> We will be back to this interesting likeness.

To sum up, for the Italian *Mezzogiorno* we can talk of a half-success in terms of convergence – i.e., of a half failure: the growth of the Southern regions in human development could have been better, particularly in the first and in the last period; conversely, that of the North-Eastern and Central regions is fully satisfactory. In order to investigate the determinants of these patterns, as well as the reasons of the differences between sub-periods, we now turn to a more in-depth analysis of each single HDI component. As we are going to see, from the historical reconstruction passive modernization emerges as a valid explanation of the partly disappointing performance of Southern Italy.

## 5.2. Life expectancy

Table 7 presents estimates of regional inequality in life expectancy (Italy = 1), measured as a component of the new HDI, in benchmark years from 1871 until 2007 (for details on methodology and sources, see the Appendix). Firstly, it is worth noticing the national rise in life expectancy throughout the period, from Unification, when it was around 33 years average, to our days: by 2007, average life expectancy has reached 81.1 years, which makes Italy a top-ranker in world comparisons. At the national level, at least, this was no doubt an amazing success.

Looking at the regions, in the Liberal age some of the ranks are not as one would expect. Although the Centre-North is well ahead and the South is behind, in fact, within the former by 1891 the North-Eastern and Central regions have taken the lead, overtaking the North-Western regions. At the same time, the latter were forging ahead in terms of Gdp: i.e., these were losing their primacy at the very time when the industrial triangle (Piedmont-Liguria-Lombardy) was taking shape. By this regard, our estimates are in line with the view that, at the early stages,

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<sup>43</sup> Prados de la Escosura, "World Human Development".

industrialization was not beneficial to the standard of living.<sup>44</sup> However, these results may also be explained by the fact that the North-Eastern and Central regions were characterized by lower household income inequality, which involved higher longevity for the poor and, above all, lower birth mortality.<sup>45</sup>

*Table 7. Regional inequality in life expectancy at birth, according to the hybrid HDI component, 1871-2007 (Italy=1)*

Regions	1871	1891	1911	1931	1938	1951	1961	1971	1981	1991	2001	2007
Piedmont	1.305	1.238	1.146	1.074	1.063	1.018	0.998	0.989	0.998	0.999	0.998	0.998
Aosta Valley						0.926	0.955	0.959	0.978	0.979	0.978	0.996
Liguria	1.198	1.119	1.105	1.101	1.098	1.062	1.036	1.016	0.998	0.992	0.997	0.999
Lombardy	1.031	1.093	0.922	0.945	0.970	0.977	0.978	0.983	0.986	0.994	0.998	0.999
<b>North-West</b>	<b>1.137</b>	<b>1.114</b>	<b>1.014</b>	<b>1.009</b>	<b>1.018</b>	<b>1.000</b>	<b>0.991</b>	<b>0.989</b>	<b>0.991</b>	<b>0.995</b>	<b>0.998</b>	<b>0.999</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	1.061	1.065	0.970	0.977	0.983	0.988	1.002	1.014	1.012
Veneto	1.160	1.259	1.143	1.043	1.049	1.027	1.005	0.997	0.989	1.006	1.011	1.007
Friuli	n.a.	n.a.	n.a.	1.061	1.065	1.113	1.007	0.983	0.978	0.990	1.002	1.005
Emilia	0.985	1.047	1.142	1.079	1.081	1.052	1.023	1.016	1.008	1.005	1.007	1.005
<b>North-East</b>	<b>1.082</b>	<b>1.166</b>	<b>1.143</b>	<b>1.059</b>	<b>1.063</b>	<b>1.043</b>	<b>1.010</b>	<b>1.001</b>	<b>0.995</b>	<b>1.004</b>	<b>1.009</b>	<b>1.007</b>
Tuscany	0.840	1.119	1.168	1.097	1.094	1.059	0.995	1.026	1.021	1.016	1.010	1.010
The Marches	1.084	1.098	1.198	1.060	1.065	1.041	1.035	1.039	1.027	1.026	1.025	1.017
Umbria	1.267	1.078	1.192	1.064	1.073	1.055	1.036	1.027	1.023	1.014	1.012	1.015
Latium	0.695	1.016	1.043	0.995	1.017	1.017	1.015	1.007	1.005	0.997	0.994	1.002
<b>Centre</b>	<b>0.915</b>	<b>1.089</b>	<b>1.149</b>	<b>1.054</b>	<b>1.060</b>	<b>1.039</b>	<b>1.012</b>	<b>1.019</b>	<b>1.014</b>	<b>1.008</b>	<b>1.005</b>	<b>1.008</b>
<b>North-East, Centre</b>	<b>0.992</b>	<b>1.124</b>	<b>1.145</b>	<b>1.057</b>	<b>1.062</b>	<b>1.042</b>	<b>1.011</b>	<b>1.011</b>	<b>1.005</b>	<b>1.006</b>	<b>1.007</b>	<b>1.007</b>
Abruzzi	0.817	0.819	1.062	1.003	1.010	0.991	1.023	1.029	1.027	1.019	1.015	1.005
Campania	0.817	0.819	0.784	0.945	0.958	0.948	0.965	0.967	0.969	0.974	0.976	0.981
Apulia	0.817	0.819	0.843	0.849	0.898	0.939	0.986	1.004	1.008	1.010	1.003	1.006
Lucania	0.817	0.819	0.923	0.827	0.854	0.866	0.993	1.018	1.030	1.023	1.003	0.996
Calabria	0.817	0.819	0.999	0.947	0.967	0.968	1.014	1.022	1.024	1.007	1.003	1.002
<b>South</b>	<b>0.817</b>	<b>0.819</b>	<b>0.886</b>	<b>0.923</b>	<b>0.947</b>	<b>0.951</b>	<b>0.987</b>	<b>0.996</b>	<b>0.998</b>	<b>0.996</b>	<b>0.993</b>	<b>0.994</b>
Sicily	1.183	0.850	0.809	0.951	0.967	0.961	1.005	0.995	1.007	0.995	0.991	0.987
Sardinia	0.886	0.912	0.972	0.912	0.963	1.005	1.030	1.015	1.023	1.006	0.999	1.001
<b>Islands</b>	<b>1.124</b>	<b>0.861</b>	<b>0.839</b>	<b>0.944</b>	<b>0.966</b>	<b>0.971</b>	<b>1.011</b>	<b>1.000</b>	<b>1.011</b>	<b>0.998</b>	<b>0.993</b>	<b>0.991</b>
<b>South and Islands</b>	<b>0.908</b>	<b>0.834</b>	<b>0.866</b>	<b>0.930</b>	<b>0.953</b>	<b>0.957</b>	<b>0.995</b>	<b>0.997</b>	<b>1.002</b>	<b>0.997</b>	<b>0.993</b>	<b>0.993</b>
<b>Centre-North</b>	<b>1.056</b>	<b>1.120</b>	<b>1.087</b>	<b>1.038</b>	<b>1.045</b>	<b>1.025</b>	<b>1.003</b>	<b>1.002</b>	<b>0.999</b>	<b>1.002</b>	<b>1.003</b>	<b>1.004</b>
<b>Italy</b>												
HDI component	<b>0.207</b>	<b>0.306</b>	<b>0.383</b>	<b>0.552</b>	<b>0.605</b>	<b>0.724</b>	<b>0.797</b>	<b>0.829</b>	<b>0.861</b>	<b>0.908</b>	<b>0.946</b>	<b>0.967</b>
Years	<b>33.10</b>	<b>39.34</b>	<b>44.21</b>	<b>54.92</b>	<b>58.26</b>	<b>65.74</b>	<b>70.34</b>	<b>72.37</b>	<b>74.40</b>	<b>77.40</b>	<b>79.80</b>	<b>81.10</b>

Sources: see the Appendix. Notes: estimates are at the borders of the time. From 1871 to 1938, Aosta Valley is included in Piedmont.

As mentioned, in the second half of the XIX century Southern Italy lagged behind the rest of the country; its rank did not substantially improve throughout the Liberal age (it is worth noticing that, also in the South, in 1911 the best positioned regions were the most agricultural ones: Abruzzi, Calabria, Sardinia, Lucania). However, in the course of the XX century the North-South divide was

<sup>44</sup> This view has noble ancestors which can be dated back to the Engels' work, *The condition* (first published in German in 1845). The debate is still open: an optimistic position based on real wages is the one by Lindert and Williamson, "English Workers' Living Standard", while a more critical stand is taken by Nardinelli, *Child Labor*; alternative real wages estimates by Feinstein, "Pessimism Perpetuated", are also less optimistic than Lindert and Williamson. Most of the more recent literature is based on anthropometric estimates: Margo and Steckel, "Heights of native born whites" Floud, Wachter, and Gregory, "Height, Health and History", Komlos, "Shrinking in a growing economy", Haines, "Health, height, nutrition, and mortality" noticed that height decreased during the industrial revolution in the United States, England, and the Netherlands; however, different results have been found for Spain (Martínez-Carrión and Moreno-Lázaro "Was there an urban height penalty in Spain?") and for Italy (A'Hearn and Vecchi, "Statura").

<sup>45</sup> In the early XX century, this was in Veneto and Emilia lower than in Lombardy: Felice, "I divari regionali in Italia" p. 378; Atella, Francisci and Vecchi, "Salute" p. 422.

completely bridged, and indeed it was even (very slightly) overturned by 1981: i.e., in terms of life expectancy the South undertook modernization – and this was impressive indeed – as well as convergence. It is only in the last two decades (1981-2007) that the *Mezzogiorno* fell back relatively to the rest of the country, although at a very slow, almost negligible, rate.

What determined such an impressive convergence in life expectancy? First of all, it should be said that convergence in life expectancy was a world phenomenon,<sup>46</sup> as a consequence of the epidemiological or health transition, which mostly in the first half of the XX century marked the passage from infectious to chronic disease as the main cause of death:<sup>47</sup> throughout the world, infectious diseases were eradicated thanks to the introduction of vaccines and later of antibiotics, as well as to improvements in nutrition and the diffusion of preventive methods of disease transmission.<sup>48</sup> Of course, within this overall pattern there were differences across countries and areas. For what concerns Italy and its regions, a brief historical overview highlights the fundamental role played by State intervention and suggests a case for passive modernization in Southern Italy.

The first milestone was the 1888 law, no. 5849, which instituted the national health service and unified the different codes of pre-Unification states. It may not be a coincidence that, according to our data, convergence began only after the 1888 law. There is little doubt that, since the health code of the former Southern Kingdom was the most backward,<sup>49</sup> Southern Italy benefited from the new law. Among the others, the law also introduced obligatory vaccination against smallpox, which paved the way to the complete eradication of the disease in the course of the XX century. Indeed, compulsory vaccination proved to be more difficult to be implemented in the South,<sup>50</sup> and some Southern regions (Sicilia, Puglia, Campania, Calabria, Basilicata) were to remain the most affected by the disease well ahead into the 1920s.<sup>51</sup> But in the end, compulsory smallpox vaccination reached everyone in the country, so much so that in 1977 could be declared as no longer necessary. This example may be taken as exemplary of passive modernization: progress came from outside (from the national State, in turn from Napoleonic France), backward South was less prone to accept it, but finally it did and thus – since in all the regions deaths by smallpox equalled to zero – converged towards the rest of country.<sup>52</sup>

Smallpox was not the only case. A 1900 law, no. 505, made possible the (almost) free delivery of quinine and thus reduced everywhere the malaria death toll,<sup>53</sup> which was higher in the *Mezzogiorno*, as well as in Latium and Tuscany.<sup>54</sup> To a minor degree also drainage works, which were extended to the *Mezzogiorno* in the Liberal age, contributed to this result, although these

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<sup>46</sup> Prados de la Escosura, "World Human Development".

<sup>47</sup> Omran, "The Epidemiological Transition". Riley, *Poverty and Life Expectancy*.

<sup>48</sup> For a periodization, see Cutler, Deaton and Lleras-Muney, "The Determinants."

<sup>49</sup> Vicarelli, *Alle radici*.

<sup>50</sup> For Naples, see Tucci, "Il vaiolo", p. 425.

<sup>51</sup> Mortara, *La salute pubblica*.

<sup>52</sup> Atella, Francisci and Vecchi, "Salute", pp. 103–8.

<sup>53</sup> Corti, "Malaria".

<sup>54</sup> Berlinguer, Conti, and Smargiasse, "L'intervento sanitario".

would have been more efficacious if followed by a land reform which could replace extensive with intensive cultivation, as some ‘meridionalists’<sup>55</sup> stigmatized.<sup>56</sup> It is not a coincidence that, where public intervention was mainly a local affair, like in the construction of hygienic infrastructures, *in primis* aqueducts and sewerages<sup>57</sup> which reduced the deaths by typhus and cholera, there the Southern main cities – Napoli, Bari, Palermo, Catania – followed with much more delay<sup>58</sup>. In Southern Italy, typhus and cholera were eradicated only in the course of the XX century, and not even completely:<sup>59</sup> in this case, convergence was produced by inertia, or better by foreign intervention, i.e. national or international capital and external technology.<sup>60</sup>

Health policies had positive consequences on life expectancy whenever they could. Yet there are some death causes overwhelmingly determined by ‘exogenous’ factors – industrialization, urbanization, alimentation, or living conditions – against which public intervention can do few, or less: these causes are mainly chronic diseases such as tumours and cardiovascular diseases, but also, in the XIX and still in the first half of the XX century, pellagra and wasting disease; but here the Southern regions scored lower values than the rest of the country, probably due to better environmental and socio-economic conditions.<sup>61</sup> On the other hand, economic ‘resources’ (and demographic transition) tend to have an heavier impact upon birth mortality, which not by chance remained higher in the South throughout the XX century, and indeed even increased relatively to the rest of the country:<sup>62</sup> here passive modernization was more difficult to implement, without an improvement in local economic and social conditions; in other words, amidst economic divergence, convergence in birth mortality was more difficult to reach. Still in our days, Italy’s main causes of death are tumours and cardiovascular diseases,<sup>63</sup> which result higher in the more affluent Northern and Central regions; the South’s lower rank in life expectancy is due to higher birth mortality.<sup>64</sup>

Finally, it must be said that, since its creation in 1970, the regional polity was progressively entrusted with the health policy (and the related budget); after the creation of the National Health Service (*Servizio Sanitario Nazionale*) in 1978 (law n. 883), the role played by different local institutions and the total costs further increased.<sup>65</sup> Passive modernization from the national state was now limited, while at the regional level there was more room for active modernization. But this was dramatically lacking in Southern regions, where there is plenty of evidence for increasing costs and inefficiency, unlike in the Centre-North; to put in the way Acemoglu and Robinson would, this difference is due to the fact that in the *Mezzogiorno* the extractive political institutions emblematic of passive modernization used their increased power to distribute funds to their factions, in

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<sup>55</sup> Analysts of the *questione meridionale*, the problem of the South

<sup>56</sup> E.g. Fortunato, *Il Mezzogiorno*. Land reform came only in the 1950s.

<sup>57</sup> Giuntini, “La modernizzazione”.

<sup>58</sup> Forti Messina, “L’Italia dell’Ottocento”.

<sup>59</sup> The few and sporadic cases still recorded in our days have no impact on aggregate per capita life expectancy.

<sup>60</sup> Limitedly to liberal Italy, see Nitti, *Scritti*.

<sup>61</sup> Felice, *Divari regionali*, p. 109.

<sup>62</sup> Felice, p. 115.

<sup>63</sup> For an overview, see Atella, Francisci and Vecchi, “Salute” pp. 117–25.

<sup>64</sup> Felice, *Divari regionali*, pp. 109 and 115.

<sup>65</sup> Scaramellini, Dell’Agnese, and Lucarno, “I processi redistributivi” pp. 358–86. See also Nuti and Vainieri, *Federalismo fiscale*.



nepotistic ways. As a consequence, the Southern regions began to fall back again in life expectancy.

### 5.3. Education

In the traditional HDI, the education component is an arithmetic mean of the adult literacy index, ALI (the percentage of literate people out of the population aged 6 years or more), for two-thirds, and the gross enrolment index, GEI (the number of students registered, expressed as a percentage of the population included in the age brackets, from 6 to 24, relative to the levels of primary, secondary – first and secondary cycle – and tertiary education (for one third).

*Table 8. Regional inequality in education, according to the hybrid HDI component, 1871-2007 (Italy=1)*

Regions	1871	1891	1911	1931	1938	1951	1961	1971	1981	1991	2001	2007
Piedmont	1.860	1.622	1.353	1.119	1.111	1.074	1.029	1.017	1.006	0.989	0.990	0.991
Aosta Valley						1.050	1.000	0.980	0.978	0.935	0.935	0.960
Liguria	1.435	1.434	1.279	1.108	1.123	1.137	1.074	1.058	1.034	1.011	1.011	1.011
Lombardy	1.766	1.554	1.344	1.143	1.131	1.086	1.031	1.020	1.009	0.997	0.994	0.997
<b>North-West</b>	<b>1.765</b>	<b>1.572</b>	<b>1.339</b>	<b>1.131</b>	<b>1.124</b>	<b>1.089</b>	<b>1.036</b>	<b>1.024</b>	<b>1.011</b>	<b>0.996</b>	<b>0.995</b>	<b>0.996</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	1.263	1.262	1.114	1.020	1.022	0.970	0.961	0.976	0.971
Veneto	1.233	1.282	1.223	1.115	1.100	1.036	1.005	1.021	1.001	0.994	0.987	0.985
Friuli	n.a.	n.a.	n.a.	1.151	1.090	1.056	1.028	1.030	1.017	1.008	1.026	1.015
Emilia	0.943	1.056	1.141	1.058	1.072	1.044	1.030	1.044	1.029	1.026	1.040	1.030
<b>North-East</b>	<b>1.104</b>	<b>1.183</b>	<b>1.189</b>	<b>1.101</b>	<b>1.101</b>	<b>1.043</b>	<b>1.016</b>	<b>1.030</b>	<b>1.011</b>	<b>1.005</b>	<b>1.011</b>	<b>1.003</b>
Tuscany	1.071	1.020	1.070	1.040	1.043	1.020	1.004	1.030	1.029	1.027	1.029	1.027
The Marches	0.729	0.773	0.839	0.958	0.983	0.967	0.990	1.009	1.010	1.031	1.031	1.018
Umbria	0.701	0.810	0.861	0.962	0.985	0.968	1.004	1.032	1.031	1.039	1.034	1.028
Latium	1.049	1.160	1.131	1.032	1.056	1.075	1.061	1.050	1.047	1.052	1.049	1.047
<b>Centre</b>	<b>0.951</b>	<b>0.976</b>	<b>1.052</b>	<b>1.018</b>	<b>1.033</b>	<b>1.029</b>	<b>1.027</b>	<b>1.036</b>	<b>1.035</b>	<b>1.040</b>	<b>1.039</b>	<b>1.036</b>
<b>North-East, Centre</b>	<b>1.031</b>	<b>1.083</b>	<b>1.122</b>	<b>1.060</b>	<b>1.071</b>	<b>1.034</b>	<b>1.021</b>	<b>1.033</b>	<b>1.023</b>	<b>1.023</b>	<b>1.026</b>	<b>1.020</b>
Abruzzi	0.579	0.634	0.710	0.882	0.923	0.882	0.953	0.969	0.986	1.004	1.009	1.016
Campania	0.739	0.752	0.775	0.867	0.902	0.924	0.954	0.955	0.976	0.982	0.986	0.993
Apulia	0.554	0.610	0.693	0.789	0.848	0.903	0.934	0.944	0.961	0.979	0.963	0.968
Lucania	0.474	0.501	0.579	0.708	0.770	0.780	0.884	0.892	0.916	0.941	0.946	0.942
Calabria	0.464	0.475	0.550	0.677	0.757	0.792	0.871	0.872	0.913	0.930	0.948	0.949
<b>South</b>	<b>0.609</b>	<b>0.639</b>	<b>0.699</b>	<b>0.808</b>	<b>0.859</b>	<b>0.884</b>	<b>0.931</b>	<b>0.938</b>	<b>0.961</b>	<b>0.974</b>	<b>0.975</b>	<b>0.980</b>
Sicily	0.483	0.594	0.748	0.791	0.848	0.902	0.938	0.946	0.969	0.980	0.983	0.984
Sardinia	0.549	0.666	0.731	0.849	0.912	0.921	0.959	0.970	0.983	1.002	0.998	0.993
<b>Islands</b>	<b>0.499</b>	<b>0.607</b>	<b>0.745</b>	<b>0.802</b>	<b>0.862</b>	<b>0.906</b>	<b>0.943</b>	<b>0.951</b>	<b>0.973</b>	<b>0.985</b>	<b>0.987</b>	<b>0.986</b>
<b>South and Islands</b>	<b>0.575</b>	<b>0.629</b>	<b>0.715</b>	<b>0.806</b>	<b>0.860</b>	<b>0.891</b>	<b>0.936</b>	<b>0.942</b>	<b>0.965</b>	<b>0.978</b>	<b>0.979</b>	<b>0.982</b>
<b>Centre-North</b>	<b>1.354</b>	<b>1.300</b>	<b>1.221</b>	<b>1.090</b>	<b>1.092</b>	<b>1.056</b>	<b>1.027</b>	<b>1.029</b>	<b>1.018</b>	<b>1.012</b>	<b>1.013</b>	<b>1.011</b>
<b>Italy (HDI comp.)</b>	<b>0.256</b>	<b>0.343</b>	<b>0.466</b>	<b>0.581</b>	<b>0.624</b>	<b>0.629</b>	<b>0.708</b>	<b>0.805</b>	<b>0.839</b>	<b>0.853</b>	<b>0.891</b>	<b>0.915</b>

Sources: see the Appendix. Notes: estimates are at the borders of the time. From 1871 to 1938, Aosta Valley is included in Piedmont.

The estimates for the Italian regions, in benchmark years from 1871 to 2007, are shown in Table 8. From the huge divide soon after Unification, convergence took place throughout hundred years. In the second half of the XIX century it proceeded at quite a slow rate, but then accelerated in the first half of the XX century, and continued in the 1950s and 1960s: as a consequence, by 1971 the North-South divide was practically filled. Since then, convergence slowed down, and

thus in the following three decades regional differences remained largely unchanged, very mild nonetheless.

One problem with the above-sketched picture is that differences *naturaliter* tend to smooth down over time, as most of the population gets literate. In Italy as a whole, the ALI increased from 32.1 in 1871 up to 98.9 in 2007; in Southern Italy, it increased from 16.6 up to 98.1, and so the North-South differences were remarkably reduced (for figures, see the Appendix). However, by 2007 in Southern Italy the share of illiterate people (1.9%) was still between two and three times that in the Centre-North (0.7%): this divide is not captured by the ALI, although arguably refers to just a fringe of the population. It goes without saying that the share of literate people is of paramount importance in pre-industrial societies, or whenever illiteracy is high,<sup>66</sup> but after mass elementary education has firmly established, literacy (the lack of it) is no longer decisive, and what should be measured is rather the educational level of an overwhelmingly literate population.

*Table 9. Regional inequality in education, according to the new HDI component, 1871-2007 (Italy=1)*

Regions	1871	1891	1911	1931	1938	1951	1961	1971	1981	1991	2001	2007
Piedmont	1.850	1.605	1.388	1.177	1.142	1.151	1.059	1.026	1.016	0.987	0.970	0.965
Aosta Valley						1.064	0.986	0.937	0.950	0.927	0.914	0.949
Liguria	1.418	1.386	1.388	1.151	1.207	1.220	1.149	1.081	1.065	1.024	1.021	1.025
Lombardy	1.673	1.521	1.328	1.171	1.129	1.152	1.056	1.038	1.041	1.012	0.998	0.990
<b>North-West</b>	<b>1.715</b>	<b>1.537</b>	<b>1.357</b>	<b>1.170</b>	<b>1.142</b>	<b>1.159</b>	<b>1.067</b>	<b>1.038</b>	<b>1.026</b>	<b>1.006</b>	<b>0.991</b>	<b>0.986</b>
Trentino-Alto A.				1.457	1.274	1.167	1.008	1.001	0.951	0.957	0.952	0.950
Veneto	1.144	1.201	1.113	1.068	1.083	1.020	0.978	1.008	0.986	0.984	0.977	0.961
Friuli				1.211	1.216	1.023	1.063	1.028	1.017	1.010	1.052	1.027
Emilia	0.920	1.067	1.177	1.088	1.081	1.071	1.045	1.042	1.045	1.025	1.049	1.048
<b>North-East</b>	<b>1.044</b>	<b>1.143</b>	<b>1.140</b>	<b>1.118</b>	<b>1.111</b>	<b>1.052</b>	<b>1.015</b>	<b>1.021</b>	<b>1.015</b>	<b>0.999</b>	<b>1.010</b>	<b>0.998</b>
Tuscany	0.981	0.919	0.990	1.029	1.055	1.027	1.009	1.028	1.033	1.020	1.024	1.023
The Marches	0.707	0.767	0.863	0.952	0.961	0.994	0.985	0.983	0.996	1.025	1.045	1.031
Umbria	0.653	0.807	0.859	0.953	0.954	0.974	1.016	1.035	1.038	1.041	1.052	1.056
Latium	0.971	1.172	1.186	1.044	1.112	1.158	1.147	1.112	1.106	1.117	1.098	1.123
<b>Centre</b>	<b>0.883</b>	<b>0.928</b>	<b>0.996</b>	<b>1.014</b>	<b>1.049</b>	<b>1.068</b>	<b>1.065</b>	<b>1.060</b>	<b>1.062</b>	<b>1.069</b>	<b>1.064</b>	<b>1.074</b>
<b>North-East, Centre</b>	<b>0.966</b>	<b>1.039</b>	<b>1.070</b>	<b>1.077</b>	<b>1.084</b>	<b>1.060</b>	<b>1.040</b>	<b>1.041</b>	<b>1.047</b>	<b>1.035</b>	<b>1.036</b>	<b>1.037</b>
Abruzzi	0.545	0.566	0.678	0.834	0.867	0.877	0.942	0.968	0.976	0.997	1.023	1.038
Campania	0.726	0.748	0.722	0.826	0.842	0.904	0.943	0.960	0.994	0.982	0.989	0.990
Apulia	0.485	0.551	0.664	0.762	0.738	0.842	0.920	0.939	0.956	0.960	0.949	0.944
Lucania	0.463	0.493	0.544	0.636	0.692	0.752	0.859	0.874	0.897	0.922	0.941	0.956
Calabria	0.411	0.417	0.481	0.631	0.643	0.721	0.836	0.818	0.870	0.898	0.966	0.960
<b>South</b>	<b>0.575</b>	<b>0.603</b>	<b>0.653</b>	<b>0.767</b>	<b>0.776</b>	<b>0.843</b>	<b>0.915</b>	<b>0.929</b>	<b>0.949</b>	<b>0.962</b>	<b>0.973</b>	<b>0.976</b>
Sicily	0.425	0.577	0.725	0.764	0.788	0.846	0.911	0.926	0.953	0.954	0.969	0.960
Sardinia	0.515	0.581	0.667	0.801	0.777	0.833	0.932	0.964	0.964	0.992	0.985	0.979
<b>Islands</b>	<b>0.444</b>	<b>0.578</b>	<b>0.714</b>	<b>0.771</b>	<b>0.786</b>	<b>0.844</b>	<b>0.916</b>	<b>0.936</b>	<b>0.956</b>	<b>0.963</b>	<b>0.973</b>	<b>0.964</b>
<b>South and Islands</b>	<b>0.534</b>	<b>0.594</b>	<b>0.674</b>	<b>0.769</b>	<b>0.779</b>	<b>0.843</b>	<b>0.916</b>	<b>0.931</b>	<b>0.951</b>	<b>0.962</b>	<b>0.973</b>	<b>0.972</b>
<b>Centre-North</b>	<b>1.295</b>	<b>1.260</b>	<b>1.197</b>	<b>1.110</b>	<b>1.125</b>	<b>1.098</b>	<b>1.051</b>	<b>1.040</b>	<b>1.043</b>	<b>1.023</b>	<b>1.019</b>	<b>1.017</b>
<b>Italy (HDI comp.)</b>	<b>0.103</b>	<b>0.142</b>	<b>0.184</b>	<b>0.261</b>	<b>0.304</b>	<b>0.352</b>	<b>0.413</b>	<b>0.488</b>	<b>0.554</b>	<b>0.648</b>	<b>0.746</b>	<b>0.781</b>

Sources: see the Appendix. Notes: estimates are at the borders of the time. From 1871 to 1938, Aosta Valley is included in Piedmont.

<sup>66</sup> It is widely recognized as a pre-requisite to the start of modern growth and some authors have even proposed a minimum literacy rate (40%) as the threshold beyond which the industrial revolution can occur. Bowman and Anderson, "The Role of Education"; Sandberg, "Ignorance"; Nuñez, "Alfabetización".

For these reasons, a more appropriate indicator is the one introduced in the 2010 *Human Development Report*, a geometric average<sup>67</sup> between the mean years of schooling index (MYSI), that is the years that a 25 years or older person has spent in school, and the expected years of schooling index (EYSI), the years of schooling that a 5 year child can expect to receive given current enrolment rates. Needless to say, this index is far more accurate than the previous one, since both the MYSI and the EYSI are differentiated by school order. Estimates of regional inequality in the new education index, in benchmark years from 1871 to 2007, are shown in Table 9 (for details on sources and methods, as well as for the values of the single components, see the Appendix). Results confirm that, although convergence did occur, the picture is less virtuous than in the case of life expectancy. A more in-depth historical reconstruction points once again towards passive modernization, which was more difficult to implement in the case of education, than in life expectancy.

The first law on compulsory education, issued in 1859 (*Legge Casati*), prescribed two years of free and compulsory elementary school, but left to the municipalities the burden of financing it. This law for the first time introduced compulsory basic education in Southern Italy, but the poorest towns, i.e. the great bulk of municipalities in the most backward regions, could not carry the burden. The next law, issued in 1877 (*Legge Coppino*), added two more years of compulsory education; it also provided some financial aid to the most needy towns, whose amount, however, was often inadequate. The third law, issued in 1904 (*Legge Orlando*), extended to 6 years compulsory education, but did not modify financing in a significant way. On the whole, during the Liberal age regional differences were reduced, thanks to unprecedented State intervention, and yet with dramatic delays, due to the fact that to the local authorities some degree of active modernization was required: the historical evidence indicates that Southern municipalities were much less keen to tax and spend for local basic services, including education.<sup>68</sup> It is not a coincidence that, from 1871 to 1911, the region which improved less was the poorest and most backward one, Calabria, although it was also the most illiterate and thus the one with more 'potential' for catching-up. The decentralization of primary education appears to be as a typical case of a failure to modernize the country because, probably, political actors have a cognitive deficit and were not fully conscious of the situation of Southern regions.

A turning point, which at least acknowledged the previous failure, came with the forth law, issued in 1911 (*Legge Daneo-Credaro*), which increased funds and prescribed the gradual transfer of costs and duties from the municipalities to the State.<sup>69</sup> Now, 'passive modernization' was fully at work in Southern Italy. As a consequence, in the interwar period the South's convergence finally included also the most backward areas: not because local administrations

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<sup>67</sup> As mentioned, the geometric average reduces substitutability among the two components: the index performs better when *both* the components, not just one, perform better, and viceversa.

<sup>68</sup> Vasta, *Innovazione tecnologica*; A'Hearn and Vecchi, "Istruzione", p. 166; Battilani, "Decentramento".

<sup>69</sup> Scholars agree: Luzzati, "Introduzione;" Vigo, "Il contributo;" Checchi, "L'efficacia." For an outline of the history of the Italian education system over the long run, see De Fort, *Scuola e analfabetismo*; Santamaita, *Storia della scuola*.

had become aware and capable of performing their duties, rather because these very duties were levied out from them and taken on by the State. The fact that here convergence was 'passive' and incomplete is confirmed by other kind of indicators, also linked to the human capital component such as the number per capita of libraries, of book published, of newspapers. Broadly speaking, these define the access to culture and, above all, in these areas local elites had retained a decisive role: significantly, in these indicators the divide between Southern Italy and the rest of the country increased, from Unification until the last decades of the XX century.<sup>70</sup>

Southern Italy kept on converging in the second half of the XX century, but this process slowed down in the last decades, as for life expectancy. This was when higher education became more important, and it is indeed in higher education that the Southern regions continued to lag behind.<sup>71</sup> For what regards university education, from the 1970s autonomy was increasingly allowed to local administrations, but this hardly improved the Southern figures. Furthermore, school abandonment, also at the compulsory level, revived in the South during the last decades, characterized by economic falling back and by rising illegal activities: in times of national hardships, the stimulus by external modernization tends to get weaker at the regional level, or – but the result is the same – 'resistance' to (passive) modernization may come up again or become stronger, whereas active modernization remains out of reach.

What is more important, 'real' differences in education are probably worse than what the mean years of schooling or the enrolment rates may report. PISA (Programme for International Student Assessment) data, which measure the knowledge and skills of 15-years-old students around the world, indicate that in terms of learning Southern students are still below the national average in all the main fields: on the whole around ten percentage points, a disparity greater than the one displayed by the education index.<sup>72</sup> Unfortunately, PISA data are available only since 2000, but for our scope they, as well as the evidence on school abandonment and the quality of public schools,<sup>73</sup> confirm passive modernization in the South.<sup>74</sup> i.e., more resistance to implement modernization in the most backward areas, although at the national level a common institutional framework has long been established.

For what regards university attendance, it may be added that still in 2007 the student-professor ratio was in the South 1.4 times higher than in the Centre-North. At the same time, graduates in scientific disciplines (as a percentage of population) were in the South barely 51.3% of the Centre-North.<sup>75</sup> Thus the South's backwardness in technical education is still impressive. It dates back to the XIX century, so much so that it has been called into question to explain the

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<sup>70</sup> Raspadori, "Inequality and Culture."

<sup>71</sup> For figure, see Felice, *Divari regionali*, p. 147; "Regional convergence".

<sup>72</sup> Nardi, "Il progetto nazionale" OECD, *PISA 2009 results*.

<sup>73</sup> Checchi and Jappelli, "School choice and quality". See also Avveduto, "La croce del Sud."

<sup>74</sup> See on this Felice and Giugliano, "Myth and Reality".

<sup>75</sup> Novacco, *Per il Mezzogiorno*, p. 252.

economic falling back of the Liberal age.<sup>76</sup> Yet at that time technical education was probably not decisive, the South's main problem being the lowest share of literate people. It became instead of crucial importance in the second half of the XX century, when the failure of the Italian State to promote higher technical education is undisputable; all the more, because at the same time massive regional policies were carried out by the State, but these did not care for education.

#### 5.4. Resources

It is now time to focus our attention to income, here measured as per capita Gdp at purchasing parity power. Regional estimates, which have been calculated by combining data of nominal Gdp<sup>77</sup> with regional price deflators<sup>78</sup>, are shown in Table 10. Before entering into the analysis, it is worth emphasising that the correction from nominal to real Gdp, i.e. the use of price deflators to correct estimates of nominal Gdp, does not change the overall picture which emerges from estimates of nominal Gdp: it reduces the North-South divide, especially in the second half of the XX century, but the gap remains quite large nonetheless; it reinforces the convergence of the North-Eastern regions during the last decades, which however was evident also in terms of nominal Gdp (see again the Appendix for figures about nominal Gdp).

Table 10. Regional inequality in real per capita GDP, 1871-2007 (Italy=1)

Regions	1871	1891	1911	1931	1938	1951	1961	1971	1981	1991	2001	2007
Piedmont	1.006	1.062	1.123	1.031	1.185	1.581	1.377	1.260	1.200	1.162	1.164	1.086
Aosta Valley						1.576	1.849	1.415	1.249	1.156	1.211	1.269
Liguria	1.221	1.373	1.449	1.457	1.522	1.547	1.227	1.089	1.010	1.040	1.003	0.952
Lombardy	1.071	1.119	1.171	1.156	1.283	1.427	1.400	1.248	1.211	1.127	1.171	1.172
<b>North-West</b>	<b>1.063</b>	<b>1.127</b>	<b>1.189</b>	<b>1.155</b>	<b>1.284</b>	<b>1.491</b>	<b>1.374</b>	<b>1.233</b>	<b>1.184</b>	<b>1.127</b>	<b>1.152</b>	<b>1.128</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	0.927	0.948	1.065	1.168	1.012	1.013	1.140	1.209	1.144
Veneto	0.997	0.817	0.899	0.810	0.896	1.103	1.198	1.123	1.166	1.204	1.171	1.202
Friuli	n.a.	n.a.	n.a.	1.242	1.208	1.180	1.011	1.112	1.097	1.142	1.094	1.096
Emilia	0.927	1.059	1.054	1.058	1.001	1.112	1.157	1.126	1.238	1.139	1.163	1.170
<b>North-East</b>	<b>0.966</b>	<b>0.922</b>	<b>0.966</b>	<b>0.955</b>	<b>0.971</b>	<b>1.113</b>	<b>1.156</b>	<b>1.113</b>	<b>1.172</b>	<b>1.167</b>	<b>1.163</b>	<b>1.174</b>
Tuscany	1.016	1.020	0.924	1.199	1.167	0.912	0.953	0.934	0.978	0.953	0.998	1.017
The Marches	0.871	0.936	0.845	0.762	0.868	0.841	0.849	0.882	1.136	1.099	1.064	1.094
Umbria	1.036	1.059	0.932	1.065	1.064	0.751	0.764	0.834	0.888	0.895	0.936	0.913
Latium	1.421	1.545	1.506	1.032	0.888	0.973	1.001	0.929	0.956	1.092	1.052	1.077
<b>Centre</b>	<b>1.065</b>	<b>1.117</b>	<b>1.041</b>	<b>1.057</b>	<b>1.010</b>	<b>0.910</b>	<b>0.943</b>	<b>0.918</b>	<b>0.982</b>	<b>1.033</b>	<b>1.027</b>	<b>1.043</b>
<b>North-East, Centre</b>	<b>1.014</b>	<b>1.017</b>	<b>1.002</b>	<b>0.999</b>	<b>0.989</b>	<b>1.015</b>	<b>1.050</b>	<b>1.014</b>	<b>1.075</b>	<b>1.099</b>	<b>1.094</b>	<b>1.106</b>
Abruzzi	0.889	0.704	0.680	0.698	0.646	0.587	0.669	0.831	0.877	0.948	0.970	0.939
Campania	1.106	0.995	1.018	0.882	0.855	0.784	0.800	0.831	0.786	0.823	0.759	0.742
Apulia	0.935	1.032	0.868	0.921	0.780	0.725	0.748	0.863	0.821	0.820	0.761	0.752
Lucania	0.807	0.773	0.776	0.871	0.750	0.419	0.564	0.748	0.744	0.689	0.892	0.890
Calabria	0.715	0.663	0.716	0.811	0.723	0.568	0.621	0.751	0.764	0.717	0.784	0.801
<b>South</b>	<b>0.946</b>	<b>0.884</b>	<b>0.864</b>	<b>0.851</b>	<b>0.775</b>	<b>0.685</b>	<b>0.729</b>	<b>0.824</b>	<b>0.801</b>	<b>0.815</b>	<b>0.793</b>	<b>0.782</b>
Sicily	0.973	0.925	0.840	0.967	0.862	0.571	0.560	0.682	0.701	0.743	0.739	0.741
Sardinia	0.814	0.938	0.965	0.943	0.951	0.662	0.740	0.898	0.769	0.863	0.879	0.906
<b>Islands</b>	<b>0.942</b>	<b>0.927</b>	<b>0.864</b>	<b>0.962</b>	<b>0.880</b>	<b>0.591</b>	<b>0.601</b>	<b>0.734</b>	<b>0.718</b>	<b>0.773</b>	<b>0.773</b>	<b>0.782</b>
<b>South Islands</b> and	<b>0.945</b>	<b>0.898</b>	<b>0.864</b>	<b>0.888</b>	<b>0.810</b>	<b>0.654</b>	<b>0.686</b>	<b>0.795</b>	<b>0.774</b>	<b>0.801</b>	<b>0.787</b>	<b>0.782</b>
<b>Centre-North</b>	<b>1.035</b>	<b>1.066</b>	<b>1.084</b>	<b>1.061</b>	<b>1.104</b>	<b>1.203</b>	<b>1.183</b>	<b>1.384</b>	<b>1.120</b>	<b>1.110</b>	<b>1.118</b>	<b>1.115</b>

<sup>76</sup> Fenoaltea, *L'economia italiana*, p. 264-66. See also Felice, "Regional convergence".

<sup>77</sup> Historical estimates are from Brunetti, Felice, and Vecchi, "Reddito"; Felice, "Regional value added". See the Appendix for further details.

<sup>78</sup> From 1931 to 2001, prices are from Amendola and Vecchi, "Costo della vita"; see also Amendola, Vecchi, and Al Kiswani, "Il costo della vita". For the Liberal age, our own estimates (see the Appendix for sources, methods, and results).

*Sources:* see the text and the Appendix. *Notes:* estimates are at the borders of the time. From 1871 to 1938, Aosta Valley is included in Piedmont.

A further note is necessary. We are aware that, in the new HDI formula, Gni is used instead of Gdp (see § 3). However, Gdp is still used in the hybrid index, which is the one we have adopted in this paper: reliable Gni estimates are in fact difficult, if not impossible, to produce for the past, for Italy as well as for other countries. On this, all we can say for the Italian regions is that, since Gni estimates would include remittances from emigrants, which became noteworthy from the 1890s to WWI and later on during the economic miracle, and were more important in the South, Gni regional figures would probably reinforce the picture we are going to present – and that is now worth anticipating: i.e., that most of the North-South divergence took place in the interwar years (when international emigration practically came to a halt), rather than in the previous Liberal age, and that there was convergence during the economic miracle.

Around the time of Unification, regional differences in per capita Gdp were not impressive, the *Mezzogiorno* hovering around 90% of the Italian average. Rather, differences were high within Southern Italy as well as within the North-East/Centre: as a whole, this last was in the middle rank between the North-West and the South, and around the national average. During the Liberal age, and in particular from 1891 to 1911, the South fell back comparatively to the rest of the country, although at a relatively slow rate: some Southern regions even slightly improved. Most of the North-South differential arose in the interwar period, at the same time when passive modernization in both education and life expectancy was more impressive. By 1951, per capita Gdp in the South had dropped to a mere two-third of the Italian average, and roughly a half of the Centre-North; meantime, regional differences had remarkably reduced both within the *Mezzogiorno* and the North-East and Centre; as a whole, this last area was still around the Italian average, whereas the North-West was at its peak. In view of this result, we can conclude that, in terms of Gdp, the nowadays common classification of Italy's regions into three macro-areas had taken shape only by the mid-XX century; as we have seen, in other dimensions, namely in education, it was already present at the time of Unification.

The fact that, from Unification until the end of WWII, Southern Italy did not converge should not come as a surprise: with a partial exception for the Giolitti's years,<sup>79</sup> in this period the national State was not engaged in promoting industrialization and economic change in the *Mezzogiorno*; if ever, the State favoured Northern industries, especially (but not only) from WWI to WWII.<sup>80</sup> Things changed with the economic miracle, when Southern Italy experienced the only period of significant convergence. In those years, the new Republic engaged into a massive regional policy in favour of the South, through the State agency called 'Cassa per il Mezzogiorno': for what regards both the amount of funds as a share of national Gdp, and the range of programs and works carried out, this

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<sup>79</sup> Barone, *Mezzogiorno e modernizzazione*, pp. 16–17; Galasso, *Il Mezzogiorno*, p. 64; Felice, *Divari regionali*, pp. 65–72.

<sup>80</sup> Zamagni, "La grande guerra".

'extraordinary intervention' was probably without parallels in Western Europe. Scholars regard positively the infrastructural works of the first two decades,<sup>81</sup> and recent quantitative reconstructions suggest that the top-down industrial schemes carried out by the Cassa were of crucial importance in promoting the South's economic convergence in the 1950s and 1960s,<sup>82</sup> not least thanks to the role played by state-owned enterprises.<sup>83</sup> Subsidized industrial plants, however, remained extraneous to the South's society and economy, with very little spin off, so much so that the press labelled them 'cathedrals in the wilderness', *cattedrali nel deserto*; furthermore, they were in the South far less efficient than in the Centre-North, not least because of political nepotism.<sup>84</sup> This evidence further supports the thesis of the passive modernization in order to explain convergence in per capita Gdp from 1951 to 1971.<sup>85</sup>

In the long run the Cassa, as well as the new agency ('Agensud') which followed from 1984 to 1992, did not change the South society and indeed, ever more clearly from the 1970s onwards, even favoured a sort of 'vicious circle', which went from unproductive expenditure to market failure.<sup>86</sup> Southern Italy began to (slightly) fall back again in terms of Gdp since the 1970s, although it continued to receive massive State subsidies.<sup>87</sup> Passive modernization can also explain this dismal end: once the top-down industrialization subsidized by the State had collapsed, following the oil crisis in the early 1970s, the *Mezzogiorno* was unable to progress on its own. The South's political and economic players, being not actively engaged in modernization, preferred to adapt to a survival strategy, characterized by the redirection of State subsidies towards unproductive uses and even illegal activities. There is a striking contrast between this story and the one experienced by the North-Eastern and Central regions, which instead in the last decades of the XX century accelerated their convergence towards the North-West. By the turn of the century, in terms of real per-capita Gdp the most-important North-Eastern regions, Veneto and Emilia, had reached and even overcome the North-West. There is now a vast literature emphasizing the role of local institutions and civic engagement<sup>88</sup> (what we could call active modernization) in favouring the economic rise of this area.

## 6. On convergence, or the lack of it: determinants and counterfactuals

As we have seen, according to the growth rate method there was convergence in human development, although with significant differences among the components, as well as among the

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<sup>81</sup> Barone, "Stato e Mezzogiorno"; D'Antone, "Straordinarietà"; Felice, *Divari regionali*, pp. 72–93; Lepore, "La valutazione"; Id., "Cassa per il Mezzogiorno".

<sup>82</sup> Felice, "Regional value added".

<sup>83</sup> Toninelli and Vasta, "Size, Boundaries, and Distribution".

<sup>84</sup> Felice, "State Ownership", p. 614.

<sup>85</sup> It lasted indeed until 1973, that is until the oil shock.

<sup>86</sup> Bevilacqua, *Breve storia*, pp. 126–132; Trigilia, *Sviluppo senza autonomia*.

<sup>87</sup> Total expenditures from the 'Cassa' and then from Agensud were on the rise until the mid 1980s, topping 0.9 per cent of Italy's Gdp. Cafiero and Marciani, "Quarant'anni", pp. 271–273.

<sup>88</sup> Putnam, *Making Democracy Work*; Bagnasco, *La costruzione*. See also Felice, *Divari regionali*, pp. 175–189; id., "Regional convergence".

historical periods. This evidence is here summarized in Table 11, which presents an index of sigma convergence (the decrease of dispersion), first introduced by Jeffrey Williamson.<sup>89</sup> For each dimension, the Table also shows the average yearly growth rates of convergence or divergence of the Williamson's indices, following the periodization presented in § 4 and 5. The contributions of each single component to sigma convergence in HDI are also calculated and presented.

*Table 11. Sigma convergence across Italy's regions in the hybrid HDI and its components (1871-2007)*

	Life expectancy	Education	Resources	Hybrid HDI
	Williamson's index of sigma convergence			
1871	0.182	0.497	0.046	0.203
1891	0.164	0.394	0.061	0.188
1911	0.146	0.271	0.060	0.135
1931	0.074	0.150	0.050	0.078
1938	0.062	0.122	0.061	0.071
1951	0.046	0.091	0.099	0.071
1961	0.021	0.051	0.075	0.041
1971	0.019	0.046	0.043	0.028
1981	0.017	0.031	0.040	0.022
1991	0.012	0.027	0.034	0.019
2001	0.011	0.027	0.035	0.019
2007	0.009	0.025	0.035	0.019
	Average yearly rates (%) of sigma convergence (+) / divergence (-)			
1871-1911	0.55	1.50	-0.66	1.02
1911-1938	3.15	2.93	-0.08	2.35
1938-1971	3.56	2.92	1.06	2.83
1971-2007	2.03	1.70	0.57	1.09
1871-2007	2.20	2.18	0.20	1.74
	Contributions (%) of each components to sigma convergence in the Hybrid Hdi			
1871-1911	39.6	107.6	-47.2	
1911-1938	52.5	48.9	-1.4	
1938-1971	47.2	38.7	14.1	
1971-2007	47.2	39.5	13.2	
1871-2007	48.0	47.7	4.4	

*Sources and notes:* our elaborations, see the text.

From Table 11 convergence is confirmed,<sup>90</sup> while of course each single component has its own time of convergence and a different contribution to HDI. Life expectancy converged the most, although this was not the component with highest regional inequality at the time of Unification. This latter was education, which converged a bit less than life expectancy. When measured as a component of HDI, differences in Gdp (Ppp) per capita are small, strongly attenuated by the

<sup>89</sup> Williamson, "Regional Inequality"

$$D = \sqrt{\sum_{i=1}^n \left( \frac{y_i}{y_m} - 1 \right)^2 \cdot \frac{p_i}{p_m}}$$

where y is the indicator (life expectancy, education, resources, human development), measured as a component of the new human development index, that is on a 0-100 scale, p stays for population and i and m refer to the i-region and to the national (or macro-regional) total respectively. This index has the same rationale as the standard deviation, but looks more appropriate in measuring convergence across regions which are different in size, since it weights deviations with the share of population (because of this, the index is also insensitive to the changes in the number of observations which occurred in 1938 and 1951).

<sup>90</sup> It is worth reminding that sigma convergence, the decrease of dispersion, also implies beta convergence, i.e. that the most backward regions get closer to the most advanced ones (for beta convergence, see Figures 3 and 4).



logarithmic scale; here convergence was very mild, and due to the catching-up of the North-Eastern and Central regions. As mentioned, differences among the historical periods are also important. For what concerns life expectancy, convergence was modest during the Liberal age, but significantly increased during the interwar period and then, even more, in the economic miracle. Convergence in education was significant during the Liberal age (mostly as a consequence of the huge differentials in 1871), but increased in the following two periods. Conversely, in Gdp we observe divergence during the Liberal age and the interwar period; here too, however, during the economic miracle we record a strong convergence. In the last decades, in all of the three dimensions the rates of convergence decreased: disappointing enough, particularly for those dimensions where regional differences still were important, i.e. education and resources. For these two components, unlike for life expectancy, we can conclude that by 2007 regional differences still were important: this is the reason why by 2007 regional differences in HDI also are still important.

Although over the long run education contributed as much as life expectancy to convergence in HDI, given the different levels of inequality in 1871, higher in education, this latter had more potential for convergence. Furthermore, it is worth reminding that convergence in education was less impressive when other proxies of human capital not included in HDI are considered (such as higher education, or effective learning as measured by PISA data). Therefore, we may conclude that, when confronted with life expectancy, the performance of the education component was disappointing. Convergence was complete only in life expectancy, for which passive modernization was easier to implement. Where instead passive modernization was less undemanding and active engagement was required, in education and even more in Gdp, results were disappointing.

The picture is even less positive if we use the SRM method to measure convergence: in this case, as previously shown in Figures 3 and 4, over the long-run there was not even convergence in HDI, but rather divergence. We hold that the reason of the disappointing performance of Southern Italy is the lack of active modernization. What instead if active modernization would have been at work also in the South and Islands? We can test this counterfactual by assigning to these areas the same growth rate (from the SRM method) of the Centre-North, where there was instead active modernization. We make three different scenarios, as from Table 12: we hypothesize the same growth rate only in life expectancy (weak), in both life expectancy and education (average), in all of the three components (strong). This scheme follows our results that for Southern Italy convergence was more difficult in resources, but less in education and even less in life expectancy. Our hypothesis is therefore that if some moderate active modernization would have been sufficient to ensure the same SRM growth rate between Southern Italy and the Centre-North in life expectancy or even in education, in case of strong active modernization these two areas would have experienced the same SRM growth not only in the social dimensions, but *a/so* in per capita GDP.

As we can see from the last rows of the Table, we can identify two different periods. The first one goes roughly from Unification up to the 1930s, when the highest improvements for Southern Italy come from incorporating the SRM growth of the Centre-North in the social dimensions, i.e., in life expectancy and, above all, education. This means that, although in those decades Southern Italy experienced convergence in social indicators, much more could be done, and this is particularly true for education in the Liberal age. The second period goes from the 1930s to our days, when the improvement for South and Islands come from the resource component: according to the SRM method, in resources most of the divergence occurred from 1931 to 1951, followed by convergence from 1951 to 1971 and then by a very slight divergence in the last decades (as can be verified by confronting the changes in the index of hypotheses II and III). Whereas in the social dimensions the gap which opened in the Liberal age was filled in the interwar years, and the rest in the second half of the XX century, in resources the gap which opened in the interwar years was never filled, and still is present nowadays.

*Table 12. Hybrid HDI for Italian macro areas, according to different hypotheses (1870-2007)*

Area	1871	1891	1911	1931	1938	1951	1961	1971	1981	1991	2001	2007
<i>Real values</i>												
<b>Centre-North</b>	0.319	0.411	0.490	0.572	0.614	0.659	0.726	0.792	0.828	0.860	0.894	0.909
<b>South and Islands</b>	0.226	0.286	0.370	0.490	0.533	0.574	0.671	0.749	0.794	0.831	0.862	0.877
<b>Italy</b>	0.282	0.360	0.442	0.546	0.582	0.631	0.709	0.778	0.817	0.850	0.883	0.899
<i>I hypothesis (weak): active modernization in life expectancy</i>												
<b>South and Islands</b>	0.226	0.308	0.392	0.503	0.545	0.584	0.670	0.748	0.791	0.831	0.864	0.880
<b>Italy</b>	0.282	0.370	0.451	0.550	0.588	0.635	0.709	0.778	0.816	0.850	0.884	0.900
<i>II hypothesis (medium): active modernization in life expectancy and education</i>												
<b>South and Islands</b>	0.226	0.335	0.430	0.521	0.561	0.585	0.664	0.754	0.791	0.827	0.864	0.881
<b>Italy</b>	0.282	0.379	0.465	0.551	0.593	0.631	0.703	0.778	0.815	0.847	0.883	0.900
<i>III hypothesis (strong): active modernization in life expectancy, education, and resources</i>												
<b>South and Islands</b>	0.226	0.338	0.437	0.527	0.574	0.617	0.692	0.770	0.810	0.843	0.882	0.900
<b>Italy</b>	0.282	0.380	0.467	0.553	0.597	0.641	0.711	0.782	0.820	0.852	0.889	0.905
<i>Changes in the index (unit points): I hypothesis</i>												
<b>South and Islands</b>	-	22	22	13	12	10	-1	-1	-3	0	2	3
<b>Italy</b>	-	10	9	4	6	4	0	0	-1	0	1	1
<i>Changes in the index (unit points): II hypothesis</i>												
<b>South and Islands</b>	-	49	60	31	28	11	-7	5	-3	-4	2	4
<b>Italy</b>	-	19	23	5	11	0	-6	0	-2	-3	0	1
<i>Changes in the index (unit points): III hypothesis</i>												
<b>South and Islands</b>	-	52	67	37	41	43	21	21	16	12	20	23
<b>Italy</b>	-	20	25	7	15	10	2	4	3	2	6	6

Sources: our own elaboration.

When considering the values of the index, there are a number of interesting results. With active modernization only in the two social dimensions (II hypothesis), as early as by 1891 Southern Italy would have ranked, in terms of human development, above Portugal (0.285), Greece (0.301), Spain (0.302), and Japan (0.317) – rather than below, as it was. Even active modernization in just one dimension, life expectancy, would have been enough for Southern Italy to reach the 0.5 threshold in 1931: like the Centre-North and, once again, above Portugal, Greece, Spain, and

Japan. However, these improvements would have died away in the following decades. By 1981, the only noticeable change is produced by active modernization *also* in resources, according to the strongest hypothesis: only in this case, Southern Italy would have reached the 0.8 threshold a decade before it did, still ranking above Spain. The problem is that during the last decades the performance of Italy as a whole was disappointing, as compared to the other advanced countries (see again Figures 1 and 2). In fact, in this last period the changes are minimal. Some are still noteworthy, nonetheless: in case of active modernization in life expectancy, by 2007 Italy as a whole would have reached the 0.9 threshold, thus joining the very-high-development club; Southern Italy, however, would have reached that longed-for threshold only with active modernization in all the three components.

## 7. Conclusions

This article presents new estimates of social and economic indicators for Italy and its regions, in benchmark years from 1871 to 2007: regional figures and the inequality pattern are discussed with regard to life expectancy, education, per capita Gdp, and particularly on HDI in its different formulas. The article also advances an interpretative hypothesis to account for the different regional patterns, which is based on the distinction between passive and active modernization.

At the regional level, passive modernization is due to State intervention, whereas active modernization is based on the role of local actors. Evidence from Italy's regions shows that passive modernization in favour of the Southern regions was implemented first in life expectancy (mostly during the Liberal age), then in education (approximately during the interwar years), finally in Gdp (in the second half of the XX century). Throughout the period from 1871 to 2007, results indicate high convergence in the case of life expectancy, uncompleted convergence in education, divergence in Gdp. Convergence in life expectancy began at the end of the XIX century and continued through most of the XX century, until the 1970s. Convergence in education took place mostly in the interwar years, as a consequence of the centralized reforms carried out in the last phase of the Liberal age before WWI. In Gdp, convergence was limited to the period of most intense national growth and State intervention, the Golden age (1951–71). In all these dimensions convergence significantly slowed down or came to a halt in the last decades, when for several reasons passive modernization was more difficult to implement, whereas at the same time there was not the passage from passive to active modernization in the *Mezzogiorno*: it does not seem to be a coincidence the fact that the falling back of Southern Italy took place in correspondence with increasing autonomy allowed to local institutions, from the creation of the regions in the 1970s onwards.

As a consequence of these different patterns, for what concerns HDI according to the growth rate method convergence was significant until the 1970s, then decreased: over the whole period, it

was driven by the life expectancy and education components. According to the short reduction method (SRM), we don't even record convergence, at least not over the whole period: some, very weak, convergence took place in the years 1911 to 1971 – that is, when passive modernization was most effective, first in education and later in Gdp. On the whole, there is little doubt that convergence in HDI was more intense in the interwar years and during the Golden age. On this, the Italian *Mezzogiorno* seems to show a similar pattern than the world periphery. Prados de la Escosura (2012) has found in fact a similar result for what concerns the convergence of Latin America, Asia, Africa and Eastern Europe towards OECD countries; furthermore, this was mainly due to the social components, as with Southern Italy. The author has rightly pointed out that most of this convergence took place when a large proportion of the periphery was under colonial rule; it could be a good clue about passive modernization in those countries too, we add. Furthermore, in most of the world periphery convergence came to a halt in the 1970s, again as with Southern Italy. For all these areas, we may conclude that all considered convergence (led by passive modernization) was disappointing.

For Southern Italy, this poor result may be due to two different reasons. Firstly, even passive modernization in Southern Italy was far from satisfactory: this is particularly true for the education component, where much more could have been done in the Liberal age, being State intervention fully at work only from 1911 onwards. As a consequence, convergence through passive modernization was slower than expected. Arguably, passive modernization was usually less expensive in education than in Gdp, while, at the same time, education was helpful to Gdp. Arguably, if State intervention was more carefully calibrated on education, better results would have come also in per capita Gdp.

Secondly, passive modernization made the economic and social system of Southern Italy more fragile, thus more subject to external shocks. The 1970s crisis was particularly harmful to the South, which since then stopped its convergence and never recovered. We may observe something similar with the current economic crisis: from 2007 to 2011, Gdp fell by 4% in the Centre-North, by 8% in the South.<sup>91</sup> More in general, during the last decades, Italy as a whole lagged behind the rest of the advanced countries, which also means that the Italian state was in turn less capable of promoting passive modernization in the *Mezzogiorno*.

Some questions remain open. Why at a certain stage of its pattern Southern Italy was not capable of passing from passive to active modernization? Would really more investment in education have been the key for success, or something more and different was needed: such as much more social capital, i.e. some change in culture and values? Was and is it possible for the State to promote the conditions which favour active modernization? Such issues fill the agenda for future research.

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<sup>91</sup> Svimez, *Rapporto 2011*.

## Appendix. The new HDI and its components: sources and methods

### *Life expectancy at birth*

Estimates of life expectancy for Italy and its regions, in benchmark years from 1871 to 2007, are presented in Table A.1. For the first two benchmarks, since series of deaths according to age classes at a regional level are missing, we could not calculate life expectancy from the mortality tables and had to resort to the “Inverse differentiated projection” method, proposed by Alessandro Rosina: in a nutshell, this procedure makes use of series of births and deaths to reconstruct life expectancy and mortality rates,<sup>92</sup> with a projection thus *inverse* with respect to normal projection techniques (which start from a series of specific rates – mortality, birth-rate, migration, etc. – in order to estimate sequences of births, deaths and distributions according to age).<sup>93</sup> For the following years (1911 and 1921, 1951, 1961, 1971, 1981 and 1991) regional series of deaths according to class ages are available,<sup>94</sup> and therefore life expectancy at zero age was obtained as a function of the mortality tables, by calculating the mean number of years lived by a generation of births. Data for 1931 and 1938 are linearly interpolated, through the square minimum method, with a passing line for the two points corresponding, respectively, to the mean ages for 1921 and 1951. Finally, data for 2001 and 2007 are from official Istat sources.<sup>95</sup>

Atella, Francisci and Vecchi present alternative estimates, for Italy and its regions.<sup>96</sup> For the Italian regions, from 1861 to 1991 their data are from an unpublished graduate thesis<sup>97</sup> and, at the present, it is impossible to compare our methodology with theirs. For Italy, their data are from the Human Mortality Database.<sup>98</sup> results are roughly the same as ours for the years 1911 onwards, while differing for the previous benchmarks. However, the authors of the estimates in the Human Mortality Database acknowledge that their results are not reliable for the period 1872-1906, since for those years “deaths counts are available only by five-year age groups (i.e., 0-4, 5-9,..., 65-74, 75+) (...). The data for 1883-84 demonstrate clear patterns of age heaping”.<sup>99</sup>

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<sup>92</sup> Data were taken from MAIC, *Annuario Statistico 1884*, Table XI, p. 46 (number of births during the years 1862 to 1881, by region) and Table XIII, p. 47 (number of deaths during the years 1862 to 1881, by region).

<sup>93</sup> For a comprehensive description of this method, see Rosina and Rossi, “Un'estensione”; Barbi, “La classe”.

<sup>94</sup> Bagni, “Tavole di mortalità”, Table 10 (new distribution according to age and regions of dead persons of both sexes, for the years 1901 to 1912; used for 1911); Gini and Galvani, “Tavole di mortalità”, Table I-A (deaths during the 1921-2 biennium; used for 1921); ISTAT, *Annuario di statistiche demografiche, 1951*, chap. III, Table 68, pp. 98-100 (deaths according to age and sex, by region); ISTAT, *Annuario di statistiche demografiche, 1961*, part IV, Table 141, pp. 242-245 (idem); ISTAT, *Annuario di statistiche demografiche, 1971*, part I, table 97, pp. 144-147 (idem); ISTAT, *Annuario di statistiche demografiche, 1981*, Table 102, pp. 374-81 (idem); ISTAT, *Annuario di statistiche demografiche, 1991*, Table 3.26, pp. 369-76 (idem).

<sup>95</sup> ISTAT, *Indicatori*; id., *Demografia*.

<sup>96</sup> Atella, Francisci and Vecchi, “Salute”.

<sup>97</sup> Taraborrelli, *Una ricostruzione*.

<sup>98</sup> University of California, *Human Mortality Database*.

<sup>99</sup> Gleijer, “About Mortality”, p. 3.

*Table A.1. Life expectancy at birth in Italy and its regions, 1871-2007*

<b>Regions</b>	<b>1871</b>	<b>1891</b>	<b>1911</b>	<b>1931</b>	<b>1938</b>	<b>1951</b>	<b>1961</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2007</b>
Piedmont	37.1	43.9	47.7	57.4	60.5	66.3	70.0	71.5	73.9	76.9	79.7	81.2
Aosta Valley						62.1	67.8	69.9	72.8	75.8	78.5	81.1
Liguria	35.7	41.6	46.7	58.3	61.8	68.3	71.9	72.9	73.9	76.5	79.6	81.3
Lombardy	33.5	41.1	42.3	52.8	56.9	64.4	68.9	71.2	73.3	76.6	79.7	81.4
<b>North-West</b>	<b>34.9</b>	<b>41.5</b>	<b>44.5</b>	<b>55.1</b>	<b>58.8</b>	<b>65.5</b>	<b>69.6</b>	<b>71.5</b>	<b>73.6</b>	<b>76.7</b>	<b>79.7</b>	<b>81.3</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	56.9	60.6	64.2	68.9	71.2	73.4	77.1	80.6	82.1
Veneto	35.2	44.3	47.6	56.3	60.0	66.8	70.3	71.9	73.4	77.3	80.4	81.8
Friuli	n.a.	n.a.	n.a.	56.9	60.6	70.7	70.4	71.2	72.8	76.4	79.9	81.7
Emilia	32.9	40.2	47.6	57.5	61.2	67.9	71.2	72.9	74.5	77.2	80.2	81.7
<b>North-East</b>	<b>34.2</b>	<b>42.5</b>	<b>47.6</b>	<b>56.8</b>	<b>60.5</b>	<b>67.5</b>	<b>70.5</b>	<b>72.1</b>	<b>73.8</b>	<b>77.2</b>	<b>80.3</b>	<b>81.8</b>
Tuscany	31.0	41.6	48.2	58.1	61.7	68.2	69.8	73.4	75.2	77.8	80.4	82.0
The Marches	34.2	41.2	48.9	56.9	60.6	67.4	71.8	74.1	75.5	78.4	81.3	82.4
Umbria	36.6	40.8	48.8	57.0	60.9	68.0	71.9	73.5	75.3	77.8	80.5	82.3
Latium	29.1	39.6	45.2	54.6	58.7	66.3	70.8	72.4	74.3	76.8	79.5	81.5
<b>Centre</b>	<b>32.0</b>	<b>41.0</b>	<b>47.7</b>	<b>56.6</b>	<b>60.4</b>	<b>67.3</b>	<b>70.7</b>	<b>73.1</b>	<b>74.8</b>	<b>77.4</b>	<b>80.1</b>	<b>81.9</b>
<b>North-East, Centre</b>	<b>33.0</b>	<b>41.7</b>	<b>47.6</b>	<b>56.7</b>	<b>60.5</b>	<b>67.4</b>	<b>70.6</b>	<b>72.6</b>	<b>74.3</b>	<b>77.3</b>	<b>80.2</b>	<b>81.8</b>
Abruzzi	30.7	35.8	45.6	54.9	58.5	65.1	71.2	73.6	75.5	78.0	80.7	81.7
Campania	30.7	35.8	38.9	52.8	56.5	63.2	68.3	70.4	72.3	75.5	78.4	80.2
Apulia	30.7	35.8	40.3	49.5	54.2	62.7	69.4	72.3	74.5	77.5	80.0	81.7
Lucania	30.7	35.8	42.3	48.8	52.5	59.4	69.7	73.0	75.7	78.3	80.0	81.1
Calabria	30.7	35.8	44.1	52.9	56.9	64.0	70.8	73.2	75.3	77.3	80.0	81.5
<b>South</b>	<b>30.7</b>	<b>35.8</b>	<b>41.4</b>	<b>52.1</b>	<b>56.1</b>	<b>63.3</b>	<b>69.4</b>	<b>71.8</b>	<b>73.9</b>	<b>76.7</b>	<b>79.4</b>	<b>81.1</b>
Sicily	35.5	36.4	39.5	53.1	56.8	63.7	70.3	71.8	74.4	76.7	79.3	80.6
Sardinia	31.6	37.6	43.5	51.7	56.7	65.8	71.6	72.8	75.3	77.3	79.8	81.4
<b>Islands</b>	<b>34.7</b>	<b>36.6</b>	<b>40.3</b>	<b>52.8</b>	<b>56.8</b>	<b>64.2</b>	<b>70.6</b>	<b>72.0</b>	<b>74.6</b>	<b>76.8</b>	<b>79.4</b>	<b>80.8</b>
<b>South and Islands</b>	<b>31.9</b>	<b>36.1</b>	<b>40.9</b>	<b>52.3</b>	<b>56.3</b>	<b>63.6</b>	<b>69.8</b>	<b>71.9</b>	<b>74.2</b>	<b>76.8</b>	<b>79.4</b>	<b>81.0</b>
<b>Centre-North</b>	<b>33.8</b>	<b>41.6</b>	<b>46.2</b>	<b>56.1</b>	<b>59.8</b>	<b>66.7</b>	<b>70.2</b>	<b>72.1</b>	<b>74.0</b>	<b>77.0</b>	<b>80.0</b>	<b>81.6</b>
<b>Italy</b>	<b>33.1</b>	<b>39.3</b>	<b>44.1</b>	<b>54.8</b>	<b>58.1</b>	<b>65.5</b>	<b>70.1</b>	<b>72.1</b>	<b>74.0</b>	<b>76.9</b>	<b>79.8</b>	<b>81.4</b>

Sources and notes: see the text. Estimates are at the borders of the time; from 1871 to 1938, Aosta Valley is included in Piedmont.

## Education

Table A.2 reports regional and national estimates of the expected years of schooling (EYS). The index has been reconstructed on the basis of information about the enrolment rate, in benchmark years from 1871 to 2007, for school orders and corresponding population cohorts, adjusted to allow for regional differences in attendance rates of compulsory orders. The enrolment rates are available about primary education (GEP, over the population aged 6-10 years), secondary education, first cycle (GESf, over the population aged 11-13 years), secondary education, secondary cycle (GESs, over the population aged 14-18 years), and university attendance (GEU, over the population aged 19-24 years);<sup>100</sup> for the years 1871 to 1938, secondary education are not separable in the two different cycles. In order to estimate the expected years of education, we assign an average of 3.5 years (i.e. 70% out of 5) to those enrolled in primary education who did not pass to the first cycle of secondary education; of 7

<sup>100</sup> MAIC, *Annuario Statistico Italiano*, 1878 (for 1871); id., *Annuario Statistico Italiano*, 1892 (for 1891); id., *Annuario Statistico Italiano*, 1913 (for 1911); ISTAT, *Annuario Statistico Italiano*, 1932 (for 1931); id., *Annuario Statistico Italiano*, 1939 (for 1938); id., *Annuario Statistico Italiano*, 1941 (for 1938); id., *Annuario Statistico Italiano*, 1953 (for 1951); id., *Annuario Statistico Italiano*, 1963 (for 1961); id., *Annuario Statistico Italiano*, 1972 (for 1971); id., *Annuario Statistico Italiano*, 1982 (for 1981); id., *Annuario Statistico Italiano*, 1992 (for 1991); id., *14<sup>e</sup> Censimento 2001* (for 2001); id., *Sistemi di indicatori territoriali, Istruzione* (for 2007).

years (5 + 2 out of 3, i.e. 66.7% out of 3) to those enrolled in secondary education first cycle who did not pass to the secondary cycle; of 11 years (8 + 3 out of 5, i.e. 60% out of 5) to those enrolled in secondary cycle of secondary education who did not pass to university (for the years 1871 to 1938, we assign 9 years to those enrolled in secondary cycle of secondary education who didn't pass to university); of 15.5 years (13 + 2.5 out of 7.6, i.e. 33% out of 7.6) to those enrolled in the university. The decrease in the percentage (from 70 to 33%) reflects the increase in the abandonment rate, when passing from the lower school orders to the higher ones. For each benchmark year, the EYS formula is thus the following:

$$\text{EYS} = 3.5 \cdot (\text{GEP} - \text{GESf}) + 7 \cdot (\text{GESs} - \text{GET}) + 11 \cdot (\text{GET} - \text{GEU}) + 15.5 \cdot \text{GEU}$$

It goes without saying that we rely upon the hypothesis that the imputed years are equal across regions and historical periods. We lack of information in order to assume different figures for specific regions and periods. We have instead some information about regional attendance rates, or at the very minimum (in the lack of attendance rates), about the share examined/enrolled students or the repeating students. This information has been used to revise the enrolment rates in compulsory orders, in more detail: the arithmetic average of attendance rates at elementary schools in 1881-82 and 1882-83 has been used to adjust enrolment rates in primary education in 1871; attendance rates in 1891-92 have been used for enrolment rates in primary education in 1891; the arithmetic average of attendance rates in 1891-92 and 1921 has been used for enrolment rates in primary education in 1911;<sup>101</sup> after checking for the high correlation between the share of examined students and the attendance rates in 1921, the shares of examined/enrolled students in 1931-32<sup>102</sup> and 1937-38<sup>103</sup> have been used to revise the enrolment rates in primary education for 1931 and 1938, respectively; the share of students repeating the first year of primary and secondary education in 1952-53<sup>104</sup> has been used to adjust enrolment rates in primary and secondary education in 1951; the same data referring to 1959-60<sup>105</sup> have been used for 1961, and referring to 1970-71<sup>106</sup> for 1971; we have attendance rates at primary and secondary education for 2001,<sup>107</sup> which have been used for 2001 and 2007; attendance rates for 1981 and 1991 are interpolated between 1971 and 2001. Finally, in order to make our results comparable with those from the UNDP report, from 1981 to 2007 national figures have been uniformed to those from the report:<sup>108</sup> for the years previous to 1981, the difference in 1981 between our estimate and that from the report ( $T1981_{\text{EYS}} - T1981_{\text{EYSu}} = 0.305971$ ) has been projected backward with decreasing

<sup>101</sup> From MAIC - Direzione generale della statistica, *Statistica*.

<sup>102</sup> From ISTAT, *Annuario Statistico Italiano, 1933*.

<sup>103</sup> From id., *Annuario Statistico Italiano, 1939*.

<sup>104</sup> From id., *Distribuzione per età 1952-53*.

<sup>105</sup> From id., *Distribuzione per età 1961*.

<sup>106</sup> From id., *Annuario statistico dell'istruzione, 1972*.

<sup>107</sup> From id., *14° Censimento 2001*.

<sup>108</sup> Which in turn are from UNESCO Institute for Statistics, *Correspondence*.

weights, inversely proportional to the distance between the historical year ( $T_i$ ) and 1981, according to the formula:

$$T_{iEYSu} = T_{EYS} + [(T_{1981EYS} - T_{1981EYSu}) / (T_{1981} - T_{1870})] * (T_i - T_{1870})$$

where  $i$  is 1971, 1961, 1951, etc., and  $[(T_{1981EYS} - T_{1981EYSu}) / (1981 - 1870)]$  is 0.002756.

*Table A.2. Expected years of schooling (EYS) in Italy and its regions, 1871-2007*

Regions	1871	1891	1911	1931	1938	1951	1961	1971	1981	1991	2001	2007
Piedmont	3.27	3.68	4.13	4.88	6.14	7.87	8.85	11.59	12.59	12.67	14.74	15.37
Aosta Valley						6.82	7.68	9.93	11.04	11.09	12.82	15.31
Liguria	2.61	3.30	4.55	4.85	6.90	8.77	10.07	12.17	13.31	13.13	15.90	16.44
Lombardy	2.83	3.52	3.90	4.74	5.83	7.54	8.45	11.32	12.54	12.70	14.93	15.58
<b>North-West</b>	<b>2.98</b>	<b>3.56</b>	<b>4.06</b>	<b>4.80</b>	<b>6.06</b>	<b>7.77</b>	<b>8.74</b>	<b>11.48</b>	<b>12.39</b>	<b>12.73</b>	<b>14.93</b>	<b>15.60</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	6.71	6.80	7.43	7.62	10.01	10.42	11.29	13.39	14.45
Veneto	2.11	2.90	3.34	4.27	5.74	6.46	7.86	11.14	11.86	12.57	14.73	15.26
Friuli	n.a.	n.a.	n.a.	4.89	6.18	5.98	8.75	11.16	12.32	12.91	16.62	16.91
Emilia	1.69	2.75	3.98	4.59	5.92	7.31	9.10	12.54	13.64	13.71	17.19	18.01
<b>North-East</b>	<b>1.92</b>	<b>2.84</b>	<b>3.61</b>	<b>4.60</b>	<b>5.93</b>	<b>6.79</b>	<b>8.38</b>	<b>11.51</b>	<b>12.58</b>	<b>12.89</b>	<b>15.71</b>	<b>16.32</b>
Tuscany	1.75	2.14	3.15	4.43	6.00	7.09	8.78	12.41	13.50	13.80	16.56	17.54
The Marches	1.34	2.06	2.96	4.09	5.26	6.75	8.51	11.90	12.79	13.96	16.91	17.61
Umbria	1.22	2.20	2.87	4.04	5.26	6.59	9.09	13.09	13.71	14.24	17.07	18.03
Latium	1.70	3.05	4.02	4.37	6.25	7.87	9.67	12.23	13.58	14.68	17.34	18.73
<b>Centre</b>	<b>1.59</b>	<b>2.31</b>	<b>3.27</b>	<b>4.31</b>	<b>5.89</b>	<b>7.30</b>	<b>9.17</b>	<b>12.30</b>	<b>13.46</b>	<b>14.30</b>	<b>17.01</b>	<b>18.18</b>
<b>North-East, Centre</b>	<b>1.76</b>	<b>2.59</b>	<b>3.46</b>	<b>4.52</b>	<b>5.91</b>	<b>7.04</b>	<b>8.77</b>	<b>11.91</b>	<b>13.24</b>	<b>13.61</b>	<b>16.33</b>	<b>17.28</b>
Abruzzi	1.16	1.55	2.35	3.78	5.05	5.93	8.21	11.76	12.52	13.34	16.16	17.51
Campania	1.57	2.15	2.39	3.71	4.77	6.18	7.93	10.82	12.20	12.57	14.65	16.33
Apulia	0.91	1.45	2.32	3.41	3.99	5.59	7.83	10.87	11.89	12.49	14.12	15.20
Lucania	1.06	1.48	1.90	2.82	3.96	5.07	7.58	10.32	11.12	12.05	13.78	15.25
Calabria	0.84	1.22	1.76	2.91	3.71	4.88	7.20	8.71	10.09	11.12	14.40	15.31
<b>South</b>	<b>1.20</b>	<b>1.69</b>	<b>2.24</b>	<b>3.45</b>	<b>4.37</b>	<b>5.68</b>	<b>7.81</b>	<b>10.60</b>	<b>11.56</b>	<b>12.38</b>	<b>14.49</b>	<b>15.92</b>
Sicily	0.77	1.62	2.61	3.43	4.46	5.71	7.76	10.76	11.95	12.44	14.59	15.67
Sardinia	1.15	1.61	2.33	3.71	4.42	5.53	8.02	11.17	11.84	13.20	15.24	16.27
<b>Islands</b>	<b>0.84</b>	<b>1.62</b>	<b>2.56</b>	<b>3.48</b>	<b>4.45</b>	<b>5.69</b>	<b>7.83</b>	<b>10.87</b>	<b>11.93</b>	<b>12.63</b>	<b>14.74</b>	<b>15.81</b>
<b>South and Islands</b>	<b>1.08</b>	<b>1.67</b>	<b>2.34</b>	<b>3.46</b>	<b>4.40</b>	<b>5.68</b>	<b>7.82</b>	<b>10.69</b>	<b>11.67</b>	<b>12.46</b>	<b>14.57</b>	<b>15.88</b>
<b>Centre-North</b>	<b>2.30</b>	<b>3.02</b>	<b>3.72</b>	<b>4.59</b>	<b>6.16</b>	<b>7.31</b>	<b>8.76</b>	<b>11.73</b>	<b>13.00</b>	<b>13.25</b>	<b>15.78</b>	<b>16.61</b>
<b>Italy</b>	<b>1.82</b>	<b>2.48</b>	<b>3.20</b>	<b>4.24</b>	<b>5.46</b>	<b>6.62</b>	<b>8.35</b>	<b>11.29</b>	<b>12.25</b>	<b>12.92</b>	<b>15.28</b>	<b>16.30</b>

*Sources and notes:* see the text. Estimates are at the borders of the time; from 1871 to 1938, Aosta Valley is included in Piedmont.

Table A.3 reports regional and national estimates of the mean years of schooling (MYS). From 1951 to 2007 these have been reconstructed from original sources.<sup>109</sup> From 1951 onwards, in fact, population censuses report, for each region, the numbers of five different 'literate' groups: holders of university degree (U), of secondary cycle of secondary education certificate (Ss), of first cycle of secondary school certificate (Sf), of primary school certificate (P), and literates without certificate (L). In order to estimate the mean years of schooling, the following formula has been employed:

<sup>109</sup> ISTAT, IX Censimento 1951, 10° Censimento 1961, 11° Censimento 1971, 12° Censimento 1981, 13° Censimento 1991, and 14° Censimento 2001; id., *Sistemi di indicatori territoriali, Istruzione*.



$$(18*NU + 13*NSs + 8*NSf + 5*NP + 2*NL) / Pop$$

where  $N$  is the number of people belonging to each group, and  $Pop$  is current population aged 6 years or more; i.e., 18, 13, 8, 5 and 2 years of schooling have been assigned to each group respectively. 'Real' average years of schooling are surely higher, since this procedure does not consider those who did not complete a school order and thus did not get a certificate: being impossible to quantify, they have been treated as equally distributed across regions. However, school abandonment was probably higher in the *Mezzogiorno*, which means that 'real' convergence in per capita years of schooling may have been a bit faster. On the other hand, qualitative standards were not equal across regions, as today PISA data suggest, thus all considered Southern regions were probably worse off than what per capita years of schooling may indicate.

Concerning the years before 1951, the number of people which got a degree in each school order has been estimated from the corresponding enrolment ratio (adjusted to allow for differences in the attendance rates of compulsory orders, as from above), under the hypothesis that, for each school order, the proportion between the number of people which got a degree (over the population aged 6 years or more) and the corresponding enrolment ratio was in 1938 the same as in 1951, and thus in 1911 the same as in 1938, and so on going back to 1871. Thus, for example, in the case of the holders of a university degree (NU):

$$(NU_t/Pop_t) / GEU_t = (NU_{t+1}/Pop_{t+1}) / GEU_{t+1}$$

i.e.

$$NU_t = [(NU_{t+1}/Pop_{t+1}) / GEU_{t+1}] * GEU_t * Pop_t$$

In the case of literates without certificate, the proportion is made with the literacy rate (i.e., the regional shares of each school order have been assigned to the regional number of literates). Finally, national figures have been uniformed to those from the UNDP report,<sup>110</sup> by using the same procedure as from EYS (where in this case:  $T_{1981_{MYS}} - T_{1981_{MYSu}} = 0.2035003$ ;  $[(T_{1981_{EYS}} - T_{1981_{EYSu}}) / (1981 - 1870)] = 0.0018333$ )

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<sup>110</sup> Which in turn are from Barro and Lee, "A New Data Set".

*Table A.3. Mean years of schooling (MYS) in Italy and its regions, 1871-2007*

<b>Regions</b>	<b>1871</b>	<b>1891</b>	<b>1911</b>	<b>1931</b>	<b>1938</b>	<b>1951</b>	<b>1961</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2007</b>
Piedmont	2.74	3.48	3.91	4.77	4.82	5.13	5.31	5.31	6.19	7.96	8.73	9.08
Aosta Valley						5.06	5.30	5.17	6.17	8.02	8.92	8.83
Liguria	2.02	2.89	3.54	4.58	4.79	5.16	5.49	5.62	6.44	8.25	8.97	9.58
Lombardy	2.59	3.27	3.78	4.85	4.97	5.36	5.53	5.57	6.53	8.34	9.13	9.44
<b>North-West</b>	<b>2.58</b>	<b>3.31</b>	<b>3.80</b>	<b>4.79</b>	<b>4.89</b>	<b>5.26</b>	<b>5.45</b>	<b>5.49</b>	<b>6.42</b>	<b>8.22</b>	<b>8.99</b>	<b>9.34</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	5.31	5.43	5.59	5.58	5.85	6.55	8.39	9.26	9.37
Veneto	1.63	2.47	3.10	4.49	4.64	4.91	5.10	5.33	6.19	7.97	8.87	9.08
Friuli	n.a.	n.a.	n.a.	5.03	5.44	5.33	5.41	5.54	6.35	8.18	9.12	9.35
Emilia	1.31	2.06	2.91	4.33	4.48	4.78	5.02	5.06	6.05	7.92	8.77	9.14
<b>North-East</b>	<b>1.49</b>	<b>2.29</b>	<b>3.02</b>	<b>4.55</b>	<b>4.73</b>	<b>4.97</b>	<b>5.15</b>	<b>5.29</b>	<b>6.18</b>	<b>8.01</b>	<b>8.89</b>	<b>9.16</b>
Tuscany	1.44	1.96	2.60	4.01	4.21	4.53	4.86	4.98	5.97	7.80	8.67	8.95
The Marches	0.98	1.42	2.11	3.72	3.99	4.46	4.78	4.75	5.86	7.78	8.84	9.05
Umbria	0.92	1.47	2.15	3.78	3.93	4.39	4.75	4.79	5.94	7.88	8.88	9.28
Latium	1.45	2.25	2.93	4.18	4.50	5.20	5.69	5.91	6.80	8.78	9.51	10.09
<b>Centre</b>	<b>1.28</b>	<b>1.85</b>	<b>2.54</b>	<b>4.00</b>	<b>4.25</b>	<b>4.76</b>	<b>5.18</b>	<b>5.34</b>	<b>6.33</b>	<b>8.26</b>	<b>9.10</b>	<b>9.53</b>
<b>North-East, Centre</b>	<b>1.39</b>	<b>2.07</b>	<b>2.77</b>	<b>4.31</b>	<b>4.51</b>	<b>4.87</b>	<b>5.16</b>	<b>5.32</b>	<b>6.26</b>	<b>8.14</b>	<b>9.00</b>	<b>9.34</b>
Abruzzi	0.67	1.03	1.64	3.09	3.37	3.95	4.52	4.66	5.74	7.71	8.87	9.23
Campania	0.88	1.30	1.82	3.09	3.38	4.03	4.70	4.98	6.12	7.93	9.14	8.99
Apulia	0.67	1.04	1.59	2.85	3.10	3.86	4.52	4.74	5.81	7.62	8.72	8.79
Lucania	0.53	0.82	1.30	2.41	2.74	3.39	4.08	4.33	5.47	7.30	8.80	8.99
Calabria	0.53	0.71	1.10	2.30	2.53	3.24	4.07	4.49	5.67	7.50	8.87	9.02
<b>South</b>	<b>0.72</b>	<b>1.07</b>	<b>1.59</b>	<b>2.86</b>	<b>3.13</b>	<b>3.81</b>	<b>4.49</b>	<b>4.77</b>	<b>5.89</b>	<b>7.72</b>	<b>8.93</b>	<b>8.97</b>
Sicily	0.62	1.02	1.69	2.86	3.16	3.82	4.48	4.66	5.74	7.56	8.81	8.81
Sardinia	0.61	1.05	1.60	2.90	3.10	3.82	4.53	4.87	5.93	7.70	8.72	8.83
<b>Islands</b>	<b>0.62</b>	<b>1.03</b>	<b>1.67</b>	<b>2.87</b>	<b>3.15</b>	<b>3.82</b>	<b>4.49</b>	<b>4.71</b>	<b>5.78</b>	<b>7.60</b>	<b>8.79</b>	<b>8.82</b>
<b>South and Islands</b>	<b>0.69</b>	<b>1.05</b>	<b>1.62</b>	<b>2.86</b>	<b>3.14</b>	<b>3.81</b>	<b>4.49</b>	<b>4.75</b>	<b>5.85</b>	<b>7.68</b>	<b>8.89</b>	<b>8.92</b>
<b>Centre-North</b>	<b>1.91</b>	<b>2.62</b>	<b>3.23</b>	<b>4.50</b>	<b>4.67</b>	<b>5.03</b>	<b>5.28</b>	<b>5.39</b>	<b>6.33</b>	<b>8.17</b>	<b>9.00</b>	<b>9.34</b>
<b>Italy</b>	<b>1.44</b>	<b>2.01</b>	<b>2.62</b>	<b>3.95</b>	<b>4.16</b>	<b>4.60</b>	<b>5.01</b>	<b>5.18</b>	<b>6.17</b>	<b>8.00</b>	<b>8.96</b>	<b>9.20</b>

Sources and notes: see the text. Estimates are at the borders of the time; from 1871 to 1938, Aosta Valley is included in Piedmont.

Tables A.4 and A.5 present estimates of literacy and of total enrolment rate, used for the hybrid component. Estimates for literacy are from official sources and, a part from the 2007 benchmark,<sup>111</sup> are not a novelty of this paper;<sup>112</sup> estimates of the total enrolment rate are instead new, since they are constructed allowing for regional differences in attendance, following the sources and methods described above.

<sup>111</sup> From ISTAT, *Sistemi di indicatori territoriali, Istruzione*.

<sup>112</sup> Vasta, "Capitale umano"; Felice, "I divari regionali in Italia"; id., *Divari regionali*. See also Zamagni, "Istruzione".

*Table A.4. Literacy in Italy and its regions, 1871-2007 (%)*

<b>Regions</b>	<b>1871</b>	<b>1891</b>	<b>1911</b>	<b>1931</b>	<b>1938</b>	<b>1951</b>	<b>1961</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2007</b>
Piedmont	58.0	73.1	88.4	95.8	96.5	97.4	98.0	98.3	98.8	99.0	99.3	99.4
Aosta Valley						97.2	98.3	98.8	99.2	99.4	99.5	99.1
Liguria	43.8	62.7	82.1	92.4	94.1	95.5	97.2	98.1	98.9	99.2	99.4	99.7
Lombardy	56.1	69.3	85.8	95.1	96.1	97.2	98.3	98.8	99.2	99.4	99.5	99.4
<b>North-West</b>	<b>55.4</b>	<b>70.0</b>	<b>86.2</b>	<b>95.0</b>	<b>96.0</b>	<b>97.0</b>	<b>98.1</b>	<b>98.6</b>	<b>99.1</b>	<b>99.2</b>	<b>99.4</b>	<b>99.4</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	98.9	98.6	99.2	99.5	99.6	99.7	99.7	99.7	99.1
Veneto	36.1	53.3	73.4	87.5	90.8	92.8	95.6	97.8	98.8	99.2	99.5	99.1
Friuli	n.a.	n.a.	n.a.	96.8	91.6	95.4	97.1	98.5	99.2	99.5	99.7	99.3
Emilia	28.5	42.7	64.0	82.5	87.8	90.9	94.4	96.9	98.3	99.0	99.3	99.0
<b>North-East</b>	<b>32.7</b>	<b>48.6</b>	<b>69.3</b>	<b>86.5</b>	<b>90.4</b>	<b>92.3</b>	<b>95.3</b>	<b>97.6</b>	<b>98.7</b>	<b>99.2</b>	<b>99.5</b>	<b>99.1</b>
Tuscany	34.2	46.0	65.7	79.6	84.9	87.8	92.1	95.3	97.5	98.6	99.2	99.5
The Marches	21.8	31.1	46.2	69.5	79.1	84.0	89.2	93.8	97.0	98.3	99.1	99.4
Umbria	21.0	32.5	48.4	69.7	79.1	83.8	89.6	93.5	96.4	98.0	98.9	99.2
Latium	34.9	49.3	66.5	78.4	84.7	88.5	92.6	95.6	97.6	98.5	99.1	99.0
<b>Centre</b>	<b>30.1</b>	<b>42.1</b>	<b>60.1</b>	<b>76.7</b>	<b>83.3</b>	<b>87.1</b>	<b>91.7</b>	<b>95.1</b>	<b>97.4</b>	<b>98.5</b>	<b>99.1</b>	<b>99.2</b>
<b>North-East, Centre</b>	<b>31.4</b>	<b>45.4</b>	<b>64.8</b>	<b>81.6</b>	<b>87.2</b>	<b>89.5</b>	<b>93.3</b>	<b>96.2</b>	<b>98.0</b>	<b>98.8</b>	<b>99.3</b>	<b>99.1</b>
Abruzzi	15.6	24.0	37.9	60.4	71.9	77.6	84.3	89.6	94.0	96.2	98.1	99.0
Campania	20.9	29.6	45.8	60.7	70.0	74.1	82.0	87.7	93.1	95.2	97.2	98.2
Apulia	16.6	24.9	39.2	55.7	67.2	72.9	81.1	87.9	93.0	96.0	97.3	98.2
Lucania	12.5	18.8	32.1	48.3	60.8	67.0	75.2	83.1	89.3	92.4	95.8	96.8
Calabria	13.4	18.4	30.7	46.0	58.2	64.0	73.5	81.2	88.4	91.7	95.3	96.2
<b>South</b>	<b>17.3</b>	<b>25.1</b>	<b>39.7</b>	<b>56.2</b>	<b>67.1</b>	<b>72.2</b>	<b>80.3</b>	<b>86.8</b>	<b>92.3</b>	<b>94.9</b>	<b>97.0</b>	<b>97.9</b>
Sicily	15.1	23.7	41.6	55.4	66.5	72.6	81.0	87.1	92.6	95.1	97.2	98.1
Sardinia	14.4	26.0	40.1	59.4	69.9	74.4	82.8	89.0	93.9	96.4	98.1	99.0
<b>Islands</b>	<b>15.0</b>	<b>24.1</b>	<b>41.3</b>	<b>56.2</b>	<b>67.2</b>	<b>73.0</b>	<b>81.4</b>	<b>87.6</b>	<b>92.9</b>	<b>95.4</b>	<b>97.4</b>	<b>98.3</b>
<b>South and Islands</b>	<b>16.6</b>	<b>24.8</b>	<b>40.3</b>	<b>56.2</b>	<b>67.2</b>	<b>72.5</b>	<b>80.7</b>	<b>87.0</b>	<b>92.5</b>	<b>95.1</b>	<b>97.1</b>	<b>98.1</b>
<b>Centre-North</b>	<b>42.0</b>	<b>56.3</b>	<b>74.2</b>	<b>86.9</b>	<b>90.6</b>	<b>92.5</b>	<b>95.3</b>	<b>97.2</b>	<b>98.4</b>	<b>99.0</b>	<b>99.3</b>	<b>99.3</b>
<b>Italy</b>	<b>32.1</b>	<b>43.9</b>	<b>61.4</b>	<b>77.2</b>	<b>82.4</b>	<b>85.8</b>	<b>90.5</b>	<b>93.9</b>	<b>96.5</b>	<b>97.6</b>	<b>98.6</b>	<b>98.9</b>

Sources and notes: see the text. Estimates are at the borders of the time; from 1871 to 1938, Aosta Valley is included in Piedmont.

Table A.5. Total enrolment ratio (corrected for attendance rate in compulsory orders), in Italy and its regions, 1871-2007 (%)

Regions	1871	1891	1911	1931	1938	1951	1961	1971	1981	1991	2001	2007
Piedmont	32.0	32.1	32.2	29.9	35.7	32.6	40.3	56.6	61.4	61.2	69.6	75.6
Aosta Valley						30.6	36.8	50.2	56.1	51.3	58.3	69.1
Liguria	25.7	30.2	31.5	31.2	38.8	40.2	46.5	64.0	66.7	65.1	73.9	79.7
Lombardy	29.2	31.4	33.5	32.3	38.0	33.8	40.3	56.7	61.5	62.2	70.2	76.9
<b>North-West</b>	<b>29.9</b>	<b>31.9</b>	<b>32.8</b>	<b>31.4</b>	<b>37.4</b>	<b>34.2</b>	<b>41.1</b>	<b>57.5</b>	<b>62.1</b>	<b>62.1</b>	<b>70.3</b>	<b>76.7</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	40.3	50.2	35.0	38.1	55.9	54.1	55.4	66.0	71.5
Veneto	24.0	29.8	34.5	35.4	39.2	32.2	39.4	58.0	60.7	61.9	68.8	74.6
Friuli	n.a.	n.a.	n.a.	31.8	37.4	32.3	41.0	58.5	62.9	64.1	76.9	81.3
Emilia	17.3	26.0	36.8	34.0	38.8	34.3	43.5	63.2	66.4	68.4	80.7	85.6
<b>North-East</b>	<b>21.0</b>	<b>28.2</b>	<b>35.5</b>	<b>34.9</b>	<b>39.6</b>	<b>33.2</b>	<b>41.1</b>	<b>59.9</b>	<b>62.6</b>	<b>64.0</b>	<b>73.9</b>	<b>78.9</b>
Tuscany	17.5	20.2	28.8	34.7	38.2	34.3	42.4	62.7	67.7	69.1	78.4	83.8
The Marches	13.7	19.2	28.1	35.6	36.8	31.9	43.4	60.7	64.7	70.4	78.7	81.9
Umbria	13.1	20.2	27.7	35.9	37.0	32.2	44.8	65.4	69.4	72.4	80.0	84.6
Latium	15.8	25.8	33.2	35.0	39.8	39.5	49.5	65.9	71.0	74.5	83.1	89.8
<b>Centre</b>	<b>15.9</b>	<b>21.1</b>	<b>32.7</b>	<b>35.1</b>	<b>38.5</b>	<b>35.8</b>	<b>45.7</b>	<b>64.1</b>	<b>69.0</b>	<b>72.0</b>	<b>80.8</b>	<b>86.6</b>
<b>North-East, Centre</b>	<b>18.5</b>	<b>24.8</b>	<b>34.2</b>	<b>35.0</b>	<b>39.2</b>	<b>34.4</b>	<b>43.4</b>	<b>62.0</b>	<b>65.8</b>	<b>68.1</b>	<b>77.4</b>	<b>82.8</b>
Abruzzi	13.3	17.8	25.3	36.8	36.9	28.4	43.3	58.9	64.0	67.7	75.5	82.0
Campania	15.4	19.5	22.5	34.6	36.3	35.9	45.8	59.0	63.3	64.9	71.8	78.0
Apulia	10.3	14.7	22.0	31.0	32.7	34.6	43.9	56.7	60.7	63.2	66.7	72.1
Lucania	11.5	14.3	19.1	29.8	30.0	26.4	43.4	53.6	56.8	60.4	65.2	68.4
Calabria	9.2	12.7	17.9	28.7	31.0	30.3	43.5	52.3	57.4	59.3	66.4	70.8
<b>South</b>	<b>12.7</b>	<b>16.7</b>	<b>21.9</b>	<b>32.7</b>	<b>34.2</b>	<b>33.1</b>	<b>44.5</b>	<b>57.1</b>	<b>61.5</b>	<b>63.7</b>	<b>69.7</b>	<b>75.3</b>
Sicily	8.3	15.0	24.5	31.5	33.5	34.7	44.7	58.0	62.7	64.4	71.2	75.9
Sardinia	13.3	17.6	24.7	33.9	37.6	35.2	45.6	59.9	63.4	67.1	73.0	76.7
<b>Islands</b>	<b>9.3</b>	<b>15.5</b>	<b>24.5</b>	<b>32.0</b>	<b>34.3</b>	<b>34.8</b>	<b>44.9</b>	<b>58.5</b>	<b>62.8</b>	<b>65.1</b>	<b>71.6</b>	<b>76.1</b>
<b>South and Islands</b>	<b>11.6</b>	<b>16.3</b>	<b>22.8</b>	<b>32.5</b>	<b>34.2</b>	<b>33.6</b>	<b>44.7</b>	<b>57.5</b>	<b>61.9</b>	<b>64.2</b>	<b>70.3</b>	<b>75.6</b>
<b>Centre-North</b>	<b>23.5</b>	<b>27.9</b>	<b>33.6</b>	<b>33.5</b>	<b>38.5</b>	<b>34.3</b>	<b>42.5</b>	<b>60.1</b>	<b>64.3</b>	<b>65.6</b>	<b>74.5</b>	<b>80.4</b>
<b>Italy</b>	<b>16.2</b>	<b>20.9</b>	<b>26.9</b>	<b>32.8</b>	<b>35.7</b>	<b>33.9</b>	<b>43.4</b>	<b>59.0</b>	<b>63.4</b>	<b>65.0</b>	<b>72.8</b>	<b>78.4</b>

Sources and notes: see the text. Estimates are at the borders of the time; from 1871 to 1938, Aosta Valley is included in Piedmont.

### PPP regional Gdp

Table A.6 reports estimates of real (at purchasing power parity) Gdp for Italy's regions, in benchmark years from 1871 to 2007. Estimates of nominal Gdp are from Felice (for 1891, 1911, 1938, 1951, 1971, 1981, 2001),<sup>113</sup> from Brunetti, Felice, and Vecchi (the same benchmarks, plus 1871, 1931, 1961, 1991),<sup>114</sup> and from Istat (2007).<sup>115</sup> All these estimates were originally made at current prices and were later converted to constant prices (2001 euros in Felice 2011, 2010 euros in Brunetti, Felice, and Vecchi), using the official deflator, i.e. the Istat cost of living index.<sup>116</sup> With the same procedure, data were converted to 2008 euros; in turn, these were converted to 2008 PPP dollars, using PPP from The World Bank.<sup>117</sup> In order to have regional estimates of real Gdp, estimates of nominal Gdp are then corrected using regional price indices, which have been taken from Amendola, Vecchi, and Al Kiswani for the years 1951 to 2009,<sup>118</sup> from Amendola and Vecchi

<sup>113</sup> Felice, "Regional value added".

<sup>114</sup> Brunetti, Felice and Vecchi, "Reddito".

<sup>115</sup> Istat, *Sistemi di indicatori territoriali, Contabilità*.

<sup>116</sup> Istat, *Il valore della moneta*.

<sup>117</sup> The World Bank, *World Development Indicators*.

<sup>118</sup> Amendola, Vecchi, and Al Kiswani, "Il costo della vita".

(same benchmarks, plus 1931 and 1938),<sup>119</sup> and are our own estimates for the years 1871 to 1911. For what concerns Liberal Italy, in fact, reliable price indices at the regional level can hardly be produced, at least according to the approach used by Amendola and Vecchi and Amendola, Vecchi and Al Kiswani for the following benchmarks. We must then resort to an alternative and less demanding procedure, which is detailed below, and whose results are displayed in table A.7.

*Table A.6. Real per capita Gdp in Italy and its regions (2008 PPP US dollars)*

<b>Regions</b>	<b>1871</b>	<b>1891</b>	<b>1911</b>	<b>1931</b>	<b>1938</b>	<b>1951</b>	<b>1961</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2007</b>
Piedmont	2579	3093	4199	4521	5704	9278	13684	20315	26588	32728	38331	36625
Aosta Valley						9248	18375	22814	27673	32559	39879	42782
Liguria	3130	3998	5419	6390	7326	9078	12194	17558	22378	29291	33030	32099
Lombardy	2746	3257	4381	5070	6176	8374	13913	20122	26831	31742	38562	39506
<b>North-West</b>	<b>2724</b>	<b>3282</b>	<b>4447</b>	<b>5065</b>	<b>6180</b>	<b>8750</b>	<b>13655</b>	<b>19880</b>	<b>26233</b>	<b>31742</b>	<b>37936</b>	<b>38023</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	4065	4563	6250	11607	16317	22444	32108	39813	38563
Veneto	2556	2378	3363	3552	4313	6473	11906	18106	25834	33910	38562	40522
Friuli	n.a.	n.a.	n.a.	5447	5815	6925	10047	17929	24305	32164	36026	36962
Emilia	2375	3083	3942	4640	4818	6526	11498	18155	27429	32080	38298	39458
<b>North-East</b>	<b>2476</b>	<b>2686</b>	<b>3613</b>	<b>4188</b>	<b>4674</b>	<b>6531</b>	<b>11488</b>	<b>17945</b>	<b>25967</b>	<b>32868</b>	<b>38298</b>	<b>39576</b>
Tuscany	2605	2972	3455	5258	5617	5352	9471	15059	21669	26841	32865	34275
The Marches	2232	2725	3160	3342	4178	4935	8437	14221	25170	30953	35038	36883
Umbria	2656	3084	3484	4670	5122	4407	7593	13447	19675	25208	30823	30795
Latium	3643	4500	5632	4526	4274	5710	9948	14979	21181	30756	34643	36298
<b>Centre</b>	<b>2730</b>	<b>3253</b>	<b>3894</b>	<b>4635</b>	<b>4862</b>	<b>5340</b>	<b>9371</b>	<b>14801</b>	<b>21757</b>	<b>29094</b>	<b>33820</b>	<b>35158</b>
<b>North-East, Centre</b>	<b>2599</b>	<b>2963</b>	<b>3748</b>	<b>4381</b>	<b>4761</b>	<b>5956</b>	<b>10435</b>	<b>16349</b>	<b>23818</b>	<b>30953</b>	<b>36026</b>	<b>37299</b>
Abruzzi	2278	2050	2542	3061	3109	3445	6648	13398	19431	26700	31943	31644
Campania	2834	2896	3806	3868	4115	4601	7950	13398	17415	23180	24994	25007
Apulia	2396	3005	3247	4039	3754	4255	7434	13914	18190	23095	25060	25353
Lucania	2069	2252	2902	3820	3610	2459	5605	12060	16484	19406	29374	30024
Calabria	1832	1930	2677	3557	3480	3333	6171	12109	16927	20194	25818	27020
<b>South</b>	<b>2425</b>	<b>2575</b>	<b>3233</b>	<b>3732</b>	<b>3730</b>	<b>4020</b>	<b>7245</b>	<b>13286</b>	<b>17747</b>	<b>22954</b>	<b>26114</b>	<b>26364</b>
Sicily	2495	2693	3143	4241	4149	3351	5565	10996	15532	20926	24336	25000
Sardinia	2085	2732	3610	4135	4578	3885	7354	14479	17038	24306	28946	30559
<b>Islands</b>	<b>2414</b>	<b>2700</b>	<b>3231</b>	<b>4219</b>	<b>4236</b>	<b>3468</b>	<b>5973</b>	<b>11834</b>	<b>15908</b>	<b>21771</b>	<b>25455</b>	<b>26354</b>
<b>South and Islands</b>	<b>2421</b>	<b>2616</b>	<b>3232</b>	<b>3894</b>	<b>3899</b>	<b>3838</b>	<b>6817</b>	<b>12818</b>	<b>17149</b>	<b>22560</b>	<b>25916</b>	<b>26364</b>
<b>Centre-North</b>	<b>2653</b>	<b>3104</b>	<b>4056</b>	<b>4653</b>	<b>5314</b>	<b>7060</b>	<b>11757</b>	<b>17832</b>	<b>24815</b>	<b>31263</b>	<b>36817</b>	<b>37586</b>
<b>Italy</b>	<b>2563</b>	<b>2912</b>	<b>3740</b>	<b>4385</b>	<b>4813</b>	<b>5868</b>	<b>9938</b>	<b>16123</b>	<b>22156</b>	<b>28165</b>	<b>32931</b>	<b>33716</b>

*Sources and notes:* see the text. Estimates are at the borders of the time; from 1871 to 1938, Aosta Valley is included in Piedmont.

For the three benchmarks of the Liberal age (1871, 1891, 1911), the regional price indices are the average of two sets of regional prices, those for tradable and non tradable goods, which are weighted with the corresponding shares of national consumption in 1911 (for 1911)<sup>120</sup> and 1891 (for 1891 and 1871)<sup>121</sup> elaborated by Ornello Vitali: in more detail, the share of tradable goods is the sum of final consumption expenditures for food and beverages, tobacco, clothes, fuel and heating, durable goods and vehicles, out of total consumption expenditures; the share of non tradable goods is the sum of the remaining entries, i.e. of final consumption expenditures for rents

<sup>119</sup> Amendola and Vecchi, "Costo della vita." Estimates of real Gdp from 1931 to 2001 have also been previously published in Italian by Brunetti, Felice, and Vecchi, "Reddito".

<sup>120</sup> Vitali, "Gli impieghi del reddito nell'anno 1911", p. 312.

<sup>121</sup> Vitali, "Gli impieghi del reddito negli anni", p. 33.

and utilities, services, transports and communications, culture and entertainment, out of total consumption expenditures. Regional prices for tradable goods are proxied through wheat prices<sup>122</sup>, whereas regional prices for non-tradable goods are proxied through the wages in the construction sector (for bricklayers).<sup>123</sup> In both cases, the datasets did not cover all the regions, and thus some hypotheses had to be introduced to fill the gaps. Concerning wheat prices (tradable goods), the best-covered benchmark is 1891, when all the Italian regions are included, although with significant differences in coverage: thus we have 6 markets for Piedmont, 2 for Liguria, 7 for Lombardy, 10 for Veneto, 8 for Emilia, 6 for Tuscany, 4 for the Marches, 1 for Umbria (Foligno), 1 for Latium (Roma), 4 for Abruzzi, 5 for Campania, 4 for Apulia, 1 for Lucania (Genzano), 3 for Calabria, 7 for Sicily, and 2 for Sardinia. With small variations, this coverage stretches backward to 1874/76, onwards to 1896. In the case of 1871, there are less markets, across a minor number of regions: 2 markets for Piedmont, 1 for Liguria (Genova), 3 for Lombardy, 3 for Veneto, 3 for Emilia, 2 for Tuscany, 1 for the Marches (Ascoli), 1 for Umbria (Foligno), 1 for Latium (Roma), 3 for Campania, 2 for Apulia, 1 for Calabria (Catanzaro). In order to have regional price differences comparable to those in 1891, we make use of a two-steps procedure: first, for the regions covered in 1871 we draw estimates comparable to those in 1876 (the closest benchmark with the same coverage as 1891), under the hypothesis that the ratio observed to unobserved market prices (over the regional average) in 1876 was the same as in 1871<sup>124</sup>; second, we estimate the prices for the missing regions in 1871, under the hypothesis that the ratio unobserved regional prices to the national average of the observed regions in 1876 was the same as in 1871. In short, the basic assumption is that the ratio between what we observe and what we do not in 1871 is the same as in 1876, when we have the full sample of observations and analogous to the 1891 benchmark. For 1911, also we have a limited number of cases, with a different regional coverage: 3 markets for Piedmont, 10 for Lombardy, 5 for Veneto, 2 for Emilia, 1 for Tuscany (Florence), 1 for the Marches (Fano), 2 for Apulia. Different is the source too<sup>125</sup>, which however goes back to 1896 and thus, having a year in common, can be reconnected to the MAIC series from 1874/6 to 1896. Thus the estimate procedure is analogous to the 1871 one, with minor differences, namely that now the figure for Calabria is a simple mean of the figures for Apulia, Lucania and Sicily. And yet in the case of 1911 the results should be regarded with less confidence, because of the more distant year of comparison (1896 to 1911, rather than 1876 to 1871) and of the minor number of observations.

Concerning wages (non tradable goods), for 1911 the figures for Umbria, Lucania and Sardinia are obtained from the corresponding regional ratios to the Italian average in 1910, whereas Calabria is again a simple mean of Apulia, Lucania and Sicily. For 1891, Umbria, Lucania and

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<sup>122</sup> Data for the prices of wheat in Italy are kindly provided by Giovanni Federico. Data are based on MAIC, *Bollettino settimanale*; Id. *Movimento dei prezzi*.

<sup>123</sup> Data on wages are our own elaborations from Vecchi and Del Papa, *Nota sulla disuguaglianza*.

<sup>124</sup> For Latium, we employ the same differential of Tuscany (where we pass from 6 markets in 1876 to only two, Florence and Leghorn, in 1871).

<sup>125</sup> Also in this case data are kindly provided by Giovanni Federico. Data are based on *Il Sole*, the leading Italian commercial newspaper.

Sardinia are obtained by interpolating the corresponding data (ratios to the Italian average) between 1871 and 1911.

*Table A.7. Estimates of regional prices, 1871-1911 (Italy =1)*

Regions	1871			1891			1911		
	Whea t	Wage s	Prices	Whea t	Wage s	Prices	Whea t	Wage s	Prices
Piedmont	1.035	1.014	1.030	0.994	1.121	1.020	0.997	1.156	1.029
Liguria	1.105	1.278	1.141	1.005	1.230	1.051	1.027	1.208	1.064
Lombardy	1.057	0.970	1.039	1.019	1.085	1.032	0.967	1.235	1.021
Veneto	1.007	1.058	1.018	0.976	1.013	0.983	0.966	0.946	0.962
Emilia	1.043	0.970	1.028	1.007	0.976	1.001	1.013	1.077	1.026
Tuscany	1.066	0.926	1.037	1.019	0.940	1.003	1.105	0.867	1.057
The Marches	0.985	0.793	0.946	0.959	0.868	0.941	0.951	0.998	0.961
Umbria	0.960	0.970	0.962	0.967	0.937	0.961	1.011	0.919	0.993
Latium	1.026	1.058	1.033	0.951	1.266	1.016	0.965	1.103	0.993
Abruzzi	0.883	0.970	0.901	0.996	0.832	0.962	1.024	0.919	1.003
Campania	0.997	0.881	0.973	1.003	0.868	0.976	0.956	0.814	0.928
Apulia	0.955	0.970	0.958	1.028	0.832	0.988	1.018	0.841	0.982
Lucania	0.796	0.970	0.832	0.955	0.976	0.959	0.935	0.998	0.948
Calabria	0.972	0.970	0.972	1.054	0.832	1.009	1.000	0.911	0.982
Sicily	0.936	1.102	0.970	0.995	1.049	1.006	1.046	0.893	1.015
Sardinia	0.847	1.410	0.962	0.964	1.146	1.001	0.955	0.946	0.953

Sources and notes: see the text.

### *The new HDI*

In this section, although in our analysis we have mostly used the hybrid HDI as main indicator, estimates of the new HDI for Italy's regions are presented, in absolute values as a component of the index (Table A.8) and compared to the Italian average (Table A.9). Sources and data are from the previous Tables of this Appendix (A.1, A.2, A.3, A.6), while the estimate procedure has been introduced in § 3 and, for what concerns the education component, in § 5.3. It is worth reminding that each component is rescaled on a 0-1 basis, through an application of a maximum and minimum threshold. In more detail, in case of life expectancy (LE) the minimum threshold is theoretical (20 years), while the maximum (83.2) is empirical (the maximum value observed in the sample, Japan in 2010); for each country or region, the Life expectancy index (LEI) is thus:  $(LE - 20) / (83.2 - 20)$ . The Education Index (EI) is a geometric average between the Mean years of schooling index (MYSI) and the Expected years of schooling index (EYSI), normalized on a 0-0.951 scale following the formula:  $[(MYSI * EYSI)^{1/2} - 0] / (0.951 - 0)$ , where 0.951 is the maximum value observed across all the countries in the world (New Zealand in 2010); the Mean years of schooling index is in turn normalized on a 0-13.2 scale:  $MYSI = (MYS - 0) / (13.2 - 0) = MYS/13.2$ , where 13.2 is the observed maximum value (United States in 2000); the Expected years of schooling index is instead normalized on a 0-20.6 scale:  $EYSI = (EYS - 0) / (20.6 - 0) = EYS/20.6$ , where 20.6 is the observed maximum value across all the countries in the world sample, from 1980 to 2010 (Australia in 2002). Resources are measured through the Income index (II), i.e., (ln of)

Gross national income (in our case, Gross national product, as mentioned), expressed in 2008 US\$ PPP, with (ln of) 108,211 (United Arab Emirates in 1980) and (ln of) 163 (Zimbabwe in 2008) as the maximum and minimum thresholds, respectively:  $II = (\ln GNI - \ln 163) / (\ln 108,211 - \ln 163)$ . The three components are then weighted through a geometric mean, according to the formula:

$$\text{New HDI}_j = \sqrt[3]{\prod_{i=1}^3 X_{ij}}$$

where  $i$  is the component (either LEI, EI, or II) and  $j$  is the region.

*Tab. A.8. The new HDI for Italy's regions, 1871-2007*

Regions	1871	1891	1911	1931	1938	1951	1961	1971	1981	1991	2001	2007
Piedmont	0.280	0.340	0.383	0.454	0.338	0.570	0.619	0.673	0.724	0.780	0.831	0.846
Aosta Valley						0.538	0.608	0.651	0.705	0.758	0.811	0.849
Liguria	0.255	0.322	0.388	0.469	0.356	0.589	0.638	0.684	0.727	0.782	0.837	0.856
Lombardy	0.252	0.322	0.353	0.439	0.329	0.558	0.615	0.674	0.727	0.783	0.839	0.858
<b>North-West</b>	<b>0.263</b>	<b>0.325</b>	<b>0.367</b>	<b>0.448</b>	<b>0.336</b>	<b>0.566</b>	<b>0.619</b>	<b>0.674</b>	<b>0.724</b>	<b>0.782</b>	<b>0.836</b>	<b>0.854</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	0.480	0.343	0.545	0.597	0.656	0.698	0.772	0.832	0.848
Veneto	0.229	0.301	0.347	0.424	0.322	0.533	0.597	0.665	0.713	0.783	0.837	0.853
Friuli	n.a.	n.a.	n.a.	0.464	0.346	0.551	0.607	0.666	0.715	0.783	0.852	0.866
Emilia	0.200	0.280	0.360	0.444	0.328	0.546	0.613	0.677	0.735	0.790	0.856	0.876
<b>North-East</b>	<b>0.216</b>	<b>0.292</b>	<b>0.353</b>	<b>0.440</b>	<b>0.329</b>	<b>0.542</b>	<b>0.604</b>	<b>0.669</b>	<b>0.722</b>	<b>0.784</b>	<b>0.845</b>	<b>0.862</b>
Tuscany	0.196	0.271	0.337	0.443	0.332	0.530	0.591	0.667	0.723	0.783	0.842	0.863
The Marches	0.188	0.251	0.322	0.408	0.310	0.517	0.588	0.657	0.723	0.794	0.855	0.871
Umbria	0.197	0.258	0.324	0.423	0.316	0.510	0.589	0.663	0.720	0.784	0.846	0.867
Latium	0.190	0.298	0.363	0.425	0.321	0.548	0.623	0.680	0.735	0.809	0.860	0.891
<b>Centre</b>	<b>0.196</b>	<b>0.273</b>	<b>0.340</b>	<b>0.430</b>	<b>0.323</b>	<b>0.533</b>	<b>0.604</b>	<b>0.672</b>	<b>0.729</b>	<b>0.797</b>	<b>0.852</b>	<b>0.878</b>
<b>North-East, Centre</b>	<b>0.206</b>	<b>0.283</b>	<b>0.347</b>	<b>0.437</b>	<b>0.326</b>	<b>0.538</b>	<b>0.605</b>	<b>0.670</b>	<b>0.728</b>	<b>0.791</b>	<b>0.849</b>	<b>0.870</b>
Abruzzi	0.157	0.199	0.278	0.379	0.285	0.470	0.565	0.649	0.706	0.777	0.841	0.861
Campania	0.177	0.228	0.269	0.380	0.286	0.482	0.563	0.634	0.691	0.755	0.808	0.828
Apulia	0.152	0.206	0.263	0.359	0.265	0.466	0.560	0.639	0.694	0.758	0.804	0.823
Lucania	0.147	0.192	0.251	0.333	0.254	0.411	0.534	0.620	0.679	0.742	0.811	0.832
Calabria	0.139	0.178	0.244	0.345	0.257	0.435	0.538	0.607	0.672	0.734	0.811	0.830
<b>South</b>	<b>0.161</b>	<b>0.209</b>	<b>0.266</b>	<b>0.367</b>	<b>0.274</b>	<b>0.465</b>	<b>0.558</b>	<b>0.633</b>	<b>0.688</b>	<b>0.755</b>	<b>0.811</b>	<b>0.831</b>
Sicily	0.165	0.210	0.266	0.375	0.281	0.458	0.547	0.623	0.685	0.747	0.805	0.821
Sardinia	0.156	0.216	0.279	0.374	0.282	0.470	0.570	0.649	0.696	0.768	0.821	0.841
<b>Islands</b>	<b>0.164</b>	<b>0.211</b>	<b>0.269</b>	<b>0.375</b>	<b>0.281</b>	<b>0.461</b>	<b>0.552</b>	<b>0.629</b>	<b>0.687</b>	<b>0.753</b>	<b>0.809</b>	<b>0.826</b>
<b>South and Islands</b>	<b>0.163</b>	<b>0.210</b>	<b>0.267</b>	<b>0.369</b>	<b>0.276</b>	<b>0.464</b>	<b>0.556</b>	<b>0.632</b>	<b>0.688</b>	<b>0.754</b>	<b>0.810</b>	<b>0.829</b>
<b>Centre-North</b>	<b>0.232</b>	<b>0.303</b>	<b>0.357</b>	<b>0.441</b>	<b>0.332</b>	<b>0.550</b>	<b>0.611</b>	<b>0.683</b>	<b>0.727</b>	<b>0.787</b>	<b>0.844</b>	<b>0.864</b>
<b>Italy</b>	<b>0.209</b>	<b>0.268</b>	<b>0.324</b>	<b>0.418</b>	<b>0.312</b>	<b>0.520</b>	<b>0.592</b>	<b>0.659</b>	<b>0.712</b>	<b>0.776</b>	<b>0.832</b>	<b>0.852</b>

*Sources and notes:* see the text. Estimates are at the borders of the time; from 1871 to 1938, Aosta Valley is included in Piedmont.



*Tab. A.9. Regional inequality in the new HDI, 1871-2007 (Italy=1)*

<b>Regions</b>	<b>1871</b>	<b>1891</b>	<b>1911</b>	<b>1931</b>	<b>1938</b>	<b>1951</b>	<b>1961</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2007</b>
Piedmont	1.343	1.266	1.181	1.085	1.084	1.097	1.044	1.021	1.017	1.005	0.998	0.992
Aosta Valley						1.035	1.027	0.989	0.990	0.977	0.975	0.996
Liguria	1.221	1.198	1.197	1.122	1.142	1.132	1.077	1.038	1.021	1.008	1.006	1.005
Lombardy	1.209	1.200	1.088	1.049	1.055	1.073	1.038	1.023	1.022	1.010	1.009	1.006
<b>North-West</b>	<b>1.259</b>	<b>1.213</b>	<b>1.133</b>	<b>1.072</b>	<b>1.077</b>	<b>1.088</b>	<b>1.044</b>	<b>1.024</b>	<b>1.017</b>	<b>1.008</b>	<b>1.005</b>	<b>1.002</b>
Trentino-Alto A.	n.a.	n.a.	n.a.	1.147	1.101	1.048	1.007	0.995	0.980	0.995	1.000	0.995
Veneto	1.099	1.120	1.071	1.014	1.032	1.025	1.009	1.010	1.002	1.009	1.005	1.001
Friuli	n.a.	n.a.	n.a.	1.110	1.110	1.060	1.024	1.011	1.004	1.009	1.024	1.016
Emilia	0.959	1.044	1.110	1.061	1.053	1.051	1.034	1.028	1.032	1.018	1.028	1.027
<b>North-East</b>	<b>1.037</b>	<b>1.090</b>	<b>1.088</b>	<b>1.053</b>	<b>1.054</b>	<b>1.042</b>	<b>1.020</b>	<b>1.015</b>	<b>1.014</b>	<b>1.011</b>	<b>1.016</b>	<b>1.012</b>
Tuscany	0.939	1.012	1.041	1.060	1.065	1.020	0.997	1.013	1.016	1.009	1.011	1.012
The Marches	0.900	0.937	0.993	0.975	0.994	0.995	0.993	0.998	1.016	1.023	1.027	1.021
Umbria	0.943	0.961	1.000	1.011	1.014	0.981	0.995	1.007	1.012	1.011	1.017	1.017
Latium	0.913	1.111	1.118	1.016	1.029	1.053	1.052	1.033	1.033	1.042	1.033	1.045
<b>Centre</b>	<b>0.938</b>	<b>1.016</b>	<b>1.050</b>	<b>1.028</b>	<b>1.037</b>	<b>1.026</b>	<b>1.020</b>	<b>1.020</b>	<b>1.024</b>	<b>1.027</b>	<b>1.024</b>	<b>1.030</b>
<b>North-East, Centre</b>	<b>0.988</b>	<b>1.055</b>	<b>1.070</b>	<b>1.044</b>	<b>1.047</b>	<b>1.035</b>	<b>1.021</b>	<b>1.018</b>	<b>1.022</b>	<b>1.020</b>	<b>1.020</b>	<b>1.021</b>
Abruzzi	0.753	0.741	0.858	0.907	0.914	0.904	0.954	0.985	0.992	1.002	1.011	1.010
Campania	0.850	0.849	0.829	0.909	0.916	0.928	0.951	0.962	0.971	0.973	0.971	0.971
Apulia	0.728	0.770	0.812	0.858	0.850	0.896	0.945	0.970	0.974	0.977	0.966	0.965
Lucania	0.704	0.716	0.773	0.796	0.814	0.790	0.902	0.941	0.954	0.956	0.974	0.977
Calabria	0.665	0.664	0.754	0.824	0.826	0.837	0.909	0.922	0.944	0.946	0.974	0.973
<b>South</b>	<b>0.772</b>	<b>0.779</b>	<b>0.820</b>	<b>0.877</b>	<b>0.879</b>	<b>0.895</b>	<b>0.941</b>	<b>0.960</b>	<b>0.967</b>	<b>0.973</b>	<b>0.974</b>	<b>0.975</b>
Sicily	0.793	0.781	0.821	0.896	0.900	0.882	0.923	0.945	0.962	0.963	0.968	0.963
Sardinia	0.750	0.803	0.862	0.895	0.903	0.905	0.962	0.985	0.978	0.990	0.987	0.987
<b>Islands</b>	<b>0.787</b>	<b>0.785</b>	<b>0.830</b>	<b>0.896</b>	<b>0.901</b>	<b>0.888</b>	<b>0.933</b>	<b>0.955</b>	<b>0.966</b>	<b>0.970</b>	<b>0.972</b>	<b>0.969</b>
<b>South and Islands</b>	<b>0.780</b>	<b>0.781</b>	<b>0.823</b>	<b>0.883</b>	<b>0.886</b>	<b>0.893</b>	<b>0.939</b>	<b>0.959</b>	<b>0.967</b>	<b>0.972</b>	<b>0.974</b>	<b>0.973</b>
<b>Centre-North</b>	<b>1.114</b>	<b>1.130</b>	<b>1.101</b>	<b>1.055</b>	<b>1.065</b>	<b>1.058</b>	<b>1.031</b>	<b>1.037</b>	<b>1.022</b>	<b>1.015</b>	<b>1.014</b>	<b>1.014</b>

*Sources and notes:* see the text. Estimates are at the borders of the time; from 1871 to 1938, Aosta Valley is included in Piedmont.

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