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Trends in Mediterranean Inequalities 1950-2015

Summary: This article is aimed at analysing the trends of economic, social and institutional inequality among the Mediterranean countries in the period 1950-2015. After the examination of the inequalities in GDP *per capita* among and within nations, we present a Human Development Index (HDI) that includes a measure of democratic achievements. Main result is that inequalities in income, after the rise from the 1950s onwards, declined from the start of the twenty-first century. Inequalities in HDI, instead, constantly diminished in the period under examination, while a process of democratization occurred. On the whole, despite the convergence among Mediterranean countries, economic inequalities are much deeper than those in social indicators.

Key words: Inequality, Human development, Political regimes, Mediterranean economies.

JEL: I3, O47.

For a long time, the Mediterranean formed an interrelated economic set, or a “World economy”: an area where economies, cultures and societies interacted with one another (Fernand Braudel 1979). Even today, the Mediterranean countries are connected both by flows of production factors and trade of goods, and by massive migrations from the poorest countries of the south and east to the more developed countries of the north (Joan Costa-Font 2012; Natalia Ribas-Mateos 2017).

The Mediterranean region has never been the object of interest by the scholars from the particular viewpoint of international inequality. This paper’s aim is to contribute to the debate in progress on global inequalities through the analysis of economic, social and political disparities in the Mediterranean and their changes from 1950 onward. Unlike other researches on the topic, we will deal with the problem of inequality from three different viewpoints: economic, social and institutional. Inequality in income is examined both between and within countries. Trends of inequality in social indicators are analysed through the Human Development Index (HDI). Inequality in political institutions is measured through an HDI that includes an index of democracy derived from the Polity IV dataset.

The paper is organized as follows: Section 1 focuses on income inequalities. Section 2 presents the calculation of the HDI. Section 3 examines the role of institutions in Mediterranean inequality and presents an HDI, which includes a measure of democracy. In Section 4, we statistically check the process of the overall

convergence in economic, social and political indicators. Section 5 concludes. Our results show how, although declining from about 2000, Mediterranean economic disparities are still remarkable, while those in social and political indicators notably diminished.

1. Economic Inequalities

1.1 Related Literature

On the World scale, increasing international divergence *among* nations in the standard of living was the main feature of economic development from the start of modern growth up to the 1950s or 1960s (François Bourguignon and Christian Morrisson 2002). From then on, divergence and inequality stabilised on a high level or slowed down until about 2000 (T. Paul Schultz 1998; Albert Berry and John Serieux 2006; Branko Milanovic 2006, 2011, 2012; Xavier Sala-i-Martin 2006). However, only from the beginning of the 21st century, the trend of inequality in income levels across countries seems to have been clearly inverted (Milanovic 2013). The decline in inequality from 2000 onwards has been largely caused by the sustained economic growth of the populous nations, mainly China and India and other emerging economies such as Indonesia and Brazil (Robert Clark 2011; Milanovic 2013). Some economists share the opinion that, in the last two centuries, international inequality described an inverted U curve, similar to that suggested by Simon Kuznets (1955, 1963) in personal income distribution during the first wave of modern growth, and by Jeffrey G. Williamson (1965, 1991) in regional inequality among regions within the modernising nations (Milanovic 2016a). Not all scholars, however, subscribe to the downward global decline of inequality among nations (Almas Heshmati 2006; Roberto Patricio Korzeniewicz and Timothy Patrick Moran 2007; Sudhir Anand and Paul Segal 2008).

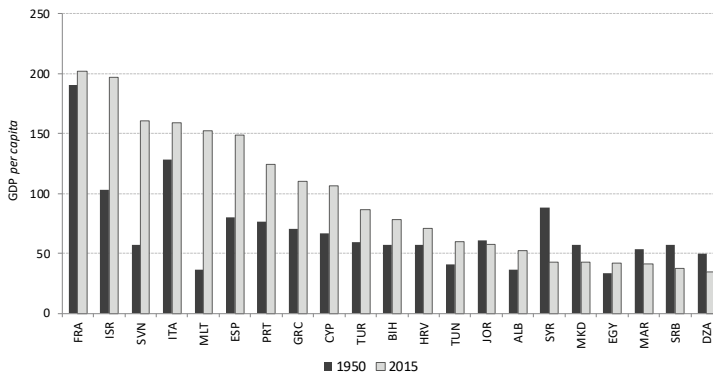
Yet, rising inequality *within* states in income distribution from the 1970s appears to limit, at least in part, the effects of increasing equality between states in average incomes and may jeopardise economic growth (Philip Arestis and Ana Rosa Gonzalez-Martinez 2016; Arestis and Carolina Troncoso Baltar 2017). Several causes of the rising inequality within the advanced nations from the 1980s onward have been recalled, such as globalization, financialization, technological change, the weaker role of trade unions, the increasing salaries for top-income earners and, in some countries, a diminished effectiveness of redistributive policies (Anthony B. Atkinson 2015). In advanced nations, the dynamics of inequality has been deepened by “institutional inertia” in front of the technological and economic changes that, in the last three decades, affected the redistribution of income (Kosta Josifidis, Novica Supić, and Emilija Beker-Pucar 2017).

The trend of inequality among the Mediterranean countries has been investigated by relatively few studies. The main results indicate how disparities in *per capita* gross domestic product (GDP) levels among the Mediterranean economies increased until 1970, stabilised until the mid-80s, and then increased again (Vittorio Daniele and Paolo Malanima 2013). Only in the first decade of the 2000s, the slowing down of growth rates of more developed economics fostered convergence among the Mediterranean nations (Andrea Ansani and Daniele 2014). The partial failure of the Euro

Mediterranean Partnership, that is the absence of a process of trade and economic integration in the Mediterranean region, was one of the causes of divergence between the northern Mediterranean countries and the Middle East and North African nations (Adalgiso Amendola 2011). A review of changes in inequality in income distribution has been provided by Salvatore Capasso and Caterina Astarita (2011), that assembled a widely used measure as the Gini index (Frank A. Cowell 2009), from the mid-1960s to mid-2000s, for some Mediterranean nations. Results show how, from the 1960s onward, inequality slightly declined in the high-income Mediterranean countries and also in Turkey and Morocco. After the break-up of Yugoslavia, in the nations of Adriatic region, inequality income distribution sharply increased during the 1990s; then, in the 2000s, it declined, albeit with remarkable national differences. The nexus between income distribution and economic growth has been analysed, in a panel of 18 Mediterranean countries for the period 1995-2012, by Amendola and Roberto Dell'Anno (2014), who found a statistically significant non-linear relationship (an inverted U-shaped curve) between inequality and growth. Mediterranean countries characterised by medium income inequality (a pre-redistribution Gini index of approximately 40-45) had the highest growth rates in the period under examination.

1.2 Inequalities among Nations

This section analyses the trends in inequality among the countries around the Mediterranean Sea. To provide a time-consistent analysis of the evolution of economic inequalities, we used data on GDP purchase power parity (PPP) and population from the Conference Board (2016)¹. This database provides data for all the countries around Mediterranean, except for Lebanon and Libya; which account, however, for about 2 percent of the Mediterranean population.



Notes: Geary-Khamis 1990 international \$ PPP.

Source: Conference Board (2016).

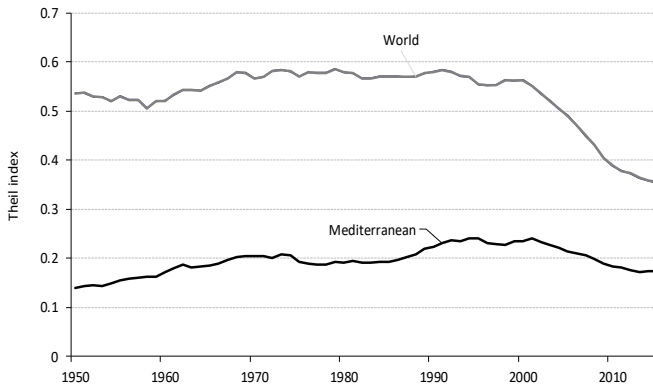
Figure 1 GDP per capita in 1950 and 2015 (Mediterranean = 100)

¹ Conference Board. 2016. Total Economy Database.

<http://www.conference-board.org/data/economydatabase/> (accessed June 02, 2016).

In 2015, with 510 million inhabitants, on the whole, the Mediterranean countries represented 7 percent of the World population and produced 10 percent of World product. In the first decade of the third millennium, 37 percent of the entire Mediterranean population lived in the four richest countries of the Latin region: Portugal, Spain, France and Italy. This 37 percent produced 70 percent of the whole gross product and consumed 60 percent of the total commercial energy (Silvana Bartoletto and Malanima 2014).

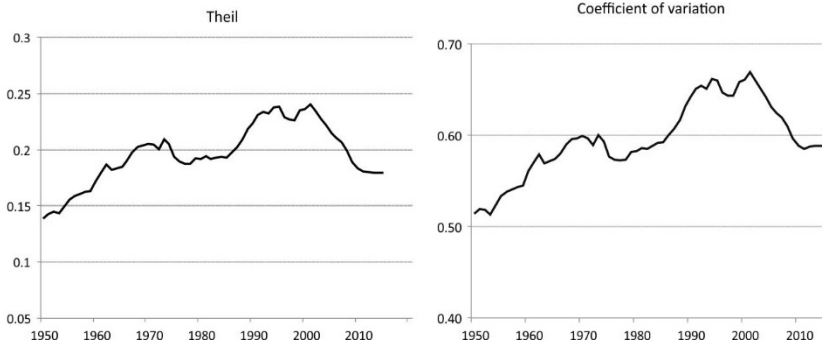
The differences in *per capita* GDP respect to the Mediterranean average are shown in Figure 1. In 2015, in France (the most developed country) average income was about 6 times that of Algeria (the poorest). Although remarkable, the disparities on the Mediterranean scale are, however, much lower than on the World scale. The World's richest countries enjoy a *per capita* GDP more than one hundred times as great as that of the poorest. Not only is inequality higher on the World than on the Mediterranean scale, but global and Mediterranean trends are also different. While weighted economic inequality in the World was relatively stable from 1950 (and particularly from 1960-1970) until 2000, the Theil index being 0.54 in 1950 and 0.56 in 2000, in the Mediterranean it increased by about 70 percent in the same half century (Figure 2). After 2000, inequality diminished both in the World and the Mediterranean (Daniele and Malanima 2013; Milanovic 2013).



Source: Our calculations on the Conference Board (2016) Total Economy Database.

Figure 2 Theil Index of Disparities on the World and Mediterranean Scale 1950-2015

Figure 3 outlines the trends of the Mediterranean disparities in *per capita* GDP through the Theil index and the coefficient of variation (Cowell 2009). Although declining in the 1970s and 1980s as the consequence of the slower growth of some advanced economies, the disparities among the Mediterranean countries rose again in the 1990s, until 2000. Inequality rapidly fell thereafter and stabilised in 2014-2015 on a level higher than at the beginning of the curve.



Source: Our calculations on the Conference Board (2016) Total Economy Database.

Figure 3 Inequalities among Countries in the Mediterranean: Theil Index and Coefficient of Variation 1950-2015

Mediterranean inequality, in the last two centuries, derived primarily from the disparity between the rich economies in the North (France, Italy, Spain, Portugal) and the other southern and eastern countries. Although the economies of these countries are far from homogeneous, the average level of development is notably lower than that of the northern Mediterranean. Among these two groups of countries, disparities grew until 2000, since the rates of *per capita* GDP growth were in the North higher than in the South-East, while the increase in population was lower.

We see, however, that from 2000 the balance began to change as the consequence of much lower rates of economic growth in northern *per capita* GDP not only since the crisis started in 2008, but even earlier. In aggregate terms, the four northern countries produced in 1950-2000 about 70-80 percent of total Mediterranean GDP; in 2015 their percentage had fallen to 61 percent (Table 1). The population share of these countries also diminished, from 57 to 36 percent of the total Mediterranean population.

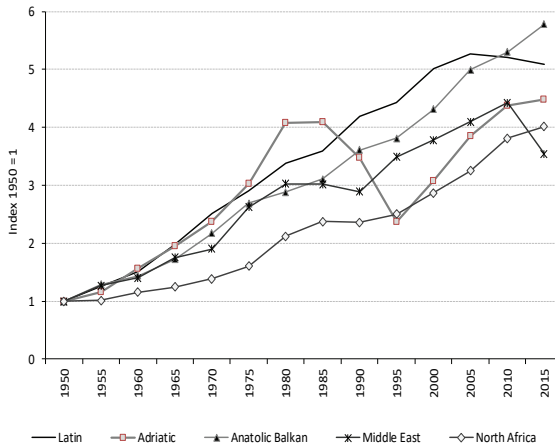
Table 1 Shares of Population and GDP in the North and the Rest of the Mediterranean Countries in 1950-2015 (%)

	Population share		GDP share	
	FRA, ESP, ITA, PRT	Other countries	FRA, ESP, ITA, PRT	Other countries
1950	57.0	43.0	77.0	23.0
1960	53.4	46.6	76.4	23.6
1970	50.3	49.7	77.3	22.7
1980	46.6	53.4	72.7	27.3
1990	41.8	58.2	71.6	28.4
2000	38.8	61.2	69.1	30.9
2015	36.1	63.9	61.2	38.8

Notes: FRA = France, ESP = Spain, ITA = Italy, PRT = Portugal.

Source: Elaboration of data from the Conference Board (2016) Total Economy Database.

Figure 4 shows how in the countries of the South and East the average rate of growth from the 2000s onwards was higher than that of the Latin countries; although the performance of North Africa has been relatively modest and that of the Middle East negative in 2010–2015 because of the economic collapse of Syria. Despite the convergence, inequalities in the standard of living – those regarding material conditions – are still profound and continue to represent, together with conflicts, the fundamental cause of the massive northwards migratory movements from the South-East. The relative economic progress in the South and East, does not depend, however, on the industrial success or innovation, but on energy exports (Algeria, Libya and, to a lesser degree, Tunisia, Egypt and Syria) and exports of other raw materials, such as cotton or phosphate (Syria, Egypt, Tunisia, Morocco), together with the rise of tourism (Georges Corm 2011).

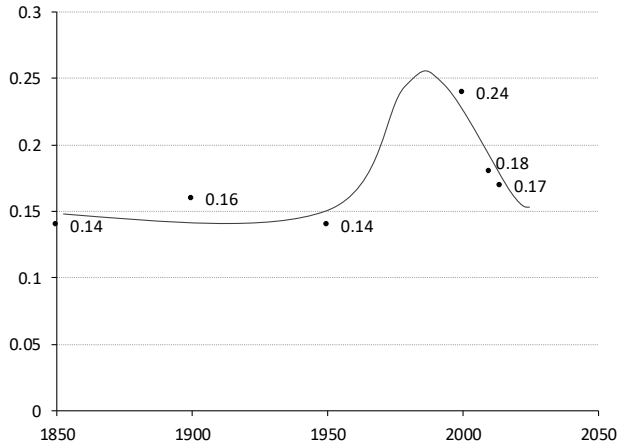


Notes: The five areas into which the Mediterranean is here divided are defined by geographic proximity. *Latin*: Portugal, Spain, France, Italy, Malta; *Adriatic*: Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro, Macedonia, Albania; *Anatolic-Balkan*: Greece, Turkey, Cyprus; *Middle East*: Syria, Israel, Jordan; *North African*: Egypt, Tunisia, Algeria, Morocco.

Source: Author's calculations on the Conference Board (2016) Total Economy Database.

Figure 4 GDP per capita in the Mediterranean Regions, 1950–2015 (Index 1950 = 1)

We lack data on GDP before 1950 for most Mediterranean countries. In order to set this change in the Mediterranean disparities in a long-term perspective, we can avail, however, of the information on real wages for ten countries, dating back as far as the middle of the nineteenth century every fifty years (Caruana Galizia 2015). The results we reached are synthesized through the values of the Theil index in Figure 5. We see that, until about 1950, inequalities among Mediterranean countries were relatively low. They increased fast after the Second World War when the countries of the Latin area or North Mediterranean experienced high rates of growth. After that period, Mediterranean inequalities diminished. On the whole, the Mediterranean economies described a clear turned U curve.



Notes: The countries included until 1950 are: France, Spain, Italy, Cyprus, Malta, Serbia, Turkey, Syria, Algeria, Egypt.

Source: Our elaboration of data from Paul Caruana Galizia (2015) for the years 1850 and 1900 and Conference Board (2016) Total Economy Database (from 1950).

Figure 5 Inequalities among Mediterranean Countries: Theil Index 1850-2015 (Data for Half Century and 2015)

1.3 Inequality within Nations

So far, we calculated Mediterranean inequality as if, in each country, everybody enjoyed the same average income. This concept of inequality does not take into account inequality in personal income distribution (Gianni Toniolo and Patrick Walker 2000; Milanovic 2005). While World inequality among nations is diminishing, the fast increase of inequality within some populous countries, such as China (Shantong Li and Zhaoyuan Xu 2008), might neutralise, at least in part, the process of convergence (Atkinson, Thomas Piketty, and Emmanuel Saez 2011; Morrisson and Fabrice Murtin 2011; Joseph Stiglitz 2012; International Monetary Fund (IMF) 2014; Paolo Liberati 2015). On the World scale, convergence seems much weaker or inexistent at all whenever personal income distribution is included (Clark 2011; Milanovic 2013). A widespread opinion is that a “sustained increase in income inequality started in the late 1970s in practically all developed nations” (Milanovic 2016b); although the trend and chronology are still controversial (Atkinson 2015; Era Dabla-Norris et al. 2015).

Data on personal income distribution within the Mediterranean nations is, in some cases, lacking and is not always homogenous (Atkinson and Andrea Brandolini 2001). We can draw, however, the overall trend of inequality among individuals. In Table 2, inequality within each Mediterranean country, for 1980-2014, is measured by the Gini coefficient. Some caveats should be kept in mind. Firstly, the number of data notably varies according to the available surveys. Typically, the number of observations is higher for developed countries. Data are reported for five-year periods: in the case of countries with more available Gini coefficients, the average is taken. Secondly, the sources of data are different. The main source we used is the dataset

compiled by Milanovic (2016c)², which presents “standardized” Gini values for a large sample of countries on the basis of eight primary household surveys. For some years and countries (as specified in the sources of Table 2), we supplemented these data with Gini coefficients of disposable income from other sources (Eurostat (2016)³, Organization for Economic Co-operation and Development (OECD 2016)⁴, and World Bank (2016)⁵ datasets). Finally, we used Gini coefficients based on net income, with the exceptions of Egypt and Morocco, for whom they refer to gross income. The heterogeneity of data sources and their low reliability for some countries are an obvious limit to the analysis.

Table 2 Gini Indices of Personal Income Distribution 1980-2014

	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010	2010-2014	Sources
Portugal	34.9	32.7	34.9	38.4	38.8	35.9	34.4	Eurostat (2016) for 2008-2014, Milanovic (2016c)
Spain	33.7	32.7	34.7	34.9	33.6	32.5	34.2	Eurostat (2016) for 2010-2014, Milanovic (2016c)
France	31.6	31.8	32.1	31.5	31.1	28.7	30.2	Milanovic (2016c) - Income
Italy	29.1		27.9	32.5	32.7	31.8	32.5	Eurostat (2016), OECD (2016)
Malta					27.0	27.5	27.5	Eurostat (2016)
Slovenia		22.6	23.4	26.3	25.4	23.4	24.2	Eurostat (2016), Milanovic (2016c)
Croatia		35.8	34.8	32.1	31.0	31.6	30.8	Eurostat (2016) for 2005-2014, Milanovic (2016c)
Bosnia and Herzegovina			33.1	34.1	35.2	35.7		Isabel Ortiz and Matthew Cummins (2011) for 2000 and 2005, Milanovic (2016c)
Serbia				32.2	33.0	29.8	29.7	World Bank (2016)
Montenegro					30.1	29.9	31.1	World Bank (2016)
Macedonia, FYR				31.0	38.6	39.9	37	Milanovic (2016c)
Albania				27	32.5	30	29	World Bank (2016)
Greece	39.2	37.1	35.8	34.6	33.1	33.6	34.2	Eurostat (2016) for 2003-2012, Milanovic (2016c)

² **Milanovic, Branko.** 2016c. All the Ginis Dataset World Bank Group. <http://datacatalog.worldbank.org/dataset/all-ginis-dataset> (accessed June 10, 2016).

³ **Eurostat.** 2016. Gini Index of Equivalised Disposable Income. http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_di12&lang=en (accessed June 11, 2016).

⁴ **Organization for Economic Co-operation and Development (OECD).** 2016. Income Distribution and Poverty Dataset. <http://www.oecd.org/social/income-distribution-database.htm> (accessed June 10, 2016).

⁵ **World Bank.** 2016. World Development Indicators. <http://databank.worldbank.org/source/world-development-indicators> (accessed June 11, 2016).

Turkey	43.5	41.3	41.6	41.6	40	40	OECD (2016), World Bank (2016)	
Cyprus	34.0	30.0	29.8	31.0	29.4	31.9	Eurostat (2016) from 2003, Milanovic (2016c)	
Israel	32.6	32.9	33.4	34.3	36.3	37.1	36	OECD (2016)
Jordan	38.4	38.4	40.0	38.6	37.3	36.0	Milanovic (2016c)	
Egypt, Arab Republic	35.1	33.0	34.1	36.0	32.6	32.5	Milanovic (2016c) - Income gross	
Tunisia	35.9	33.9	36.6	48.0	43.0	39.8	Milanovic (2016c)	
Algeria	37.9	35.6	35.6	35.9	35.6		Ortiz and Cummins (2011) for 2000 and 2005	
Morocco	39.2	39.2	39.2	39.6	45.0	47.0	Milanovic (2016c) - Income gross	

Notes: Averages of available data for five years.

Source: Ortiz and Cummins (2011), Eurostat (2016), Milanovic (2016c), OECD (2016), and World Bank (2016).

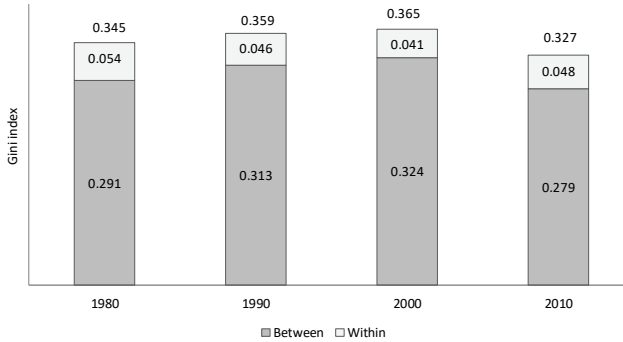
For the Mediterranean, we can also avail of data on the income of the top 10 percent of the population; sometimes used as an indicator of inequality in personal income distribution (as done by Atkinson, Piketty, and Saez 2011; Piketty 2014). Historical data on income accruing to the top 10 percent for three Mediterranean countries such as France, Spain and Italy, suggests diverse trends. While in Italy inequality in income rose from 1984, it was diminishing in France from 1964 and was almost stable in Spain (Atkinson, Piketty, and Saez 2011). Data provided by the World Bank (2016) for the income held by the richest 10 percent concerns only some countries in the period 1985-2014. A comparison between these data and Gini indices reported in Table 2 shows a relatively high correlation when data become more plentiful, that is for the periods 2000-2005 and 2005-2010 ($r = 0.90$ and $r = 0.85$, respectively).

Following Milanovic (2005, 2013), we computed the Gini index of total inequality G_t for the Mediterranean region, combining *within* countries and *between* countries inequality according to the Equation (1) (on Gini decomposition see Cowell 2009):

$$G_t = \sum_{i=1}^n G_i p_i \pi_i + \sum_i \sum_{j>1}^n \left(\frac{y_j - y_i}{y_i} \right) \pi_i p_j, \quad (1)$$

where, for a country i , G is the Gini index, y is *per capita* income of country i , p the share of population and π the share of GDP on the Mediterranean area on the whole. The first term on the left-side of the Equation (1) is the *within* component of total inequality; the second term, that is the *between* component, is weighted with GDP and population shares. Available data on income distribution (for individuals or households) within each country only allow us to calculate total inequality for a few years, that is around 1980, 1990, 2000 and 2010. The Gini index of total inequality (with its components) for the Mediterranean region is reported by Figure 6. It can be

noted how in the Mediterranean, inequality is almost entirely explained by inequality *between* countries (for about 85 percent), while, on the World scale, this component explains about 70 percent of global inequality (Milanovic 2005).



Source: See text and Table 2.

Figure 6 Gini Index of Total Inequality and between and within Components, Mediterranean Countries 1980-2010

On the World scale, the richest 10 percent of the population owns 56 percent of the global income (Milanovic 2011). In the Mediterranean, it only holds 27.5, with Morocco at the top (32 percent) and Slovenia at the bottom (24 percent)⁶. In the period 1980-2010, because of the lack of remarkable changes in personal income distribution within Mediterranean countries, the overall trend of inequality among nations is unaffected by the addition of the inequality within countries. The level of inequality measured by the Gini indices increased by 15-20 percent over the thirty years. Whenever we include the available figures for the previous decades 1940-1979 (whose reliability is, however, dubious and therefore are not presented in Table 2 and Figure 6), inequality within countries adds 20-25 percent to the Gini index of inequality among nations. The decomposition of the Gini index of total inequality into inequality among nations, confirms how Mediterranean inequality depends primarily on the different economic conditions among the nations and especially between North and South-East.

2. Human Development Indicators

2.1 Inequality in Human Development

Disparities in average income, both between and within countries, measure only an aspect of the international differences in the standard of living. Embodying the Amartya Sen's capabilities approach to individual well-being (Amartya Sen 1999), the HDI, elaborated since 1990 by the United Nations Development Programme (UNDP), summarises, at the international level, the achievements in three basic dimensions of human development: health, education and income (Elizabeth A. Stanton 2007; UNDP

⁶ Our calculations on data from World Bank (2016).

2015). The health dimension is proxied by life expectancy at birth; differences in education are computed by combining the mean years of education with expected years of schooling; the income dimension is represented by GDP *per capita*. The procedure to calculate any dimension index I consists in applying the following normalization formula:

$$\text{Dimension index} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}} \quad (2)$$

The HDI is, then, obtained as the geometric mean of normalized indices for each of the three dimensions:

$$\text{HDI} = (I_{\text{health}} \cdot I_{\text{education}} \cdot I_{\text{income}})^{\left(\frac{1}{3}\right)} \quad (3)$$

HDI estimates by the UNDP are available from 1980 onward. In order to cover a longer time-span, we calculated HDI values for twenty-one Mediterranean countries using the same UNDP (2015) procedure. Our estimates cover the period 1960-2014. For the health index, we used data on life expectancy at birth by the World Bank (2013, 2015) and UNDP (2016): the maximum value was set to 85 and the minimum to 20. Since, in our sample of countries, data on enrolment rates are not available for the entire period, to calculate the education index we used the mean years of schooling by Robert J. Barro and Jong-Wha Lee (2013 and online updates) and, for the year 2015 by UNDP (2016). The maximum value for mean years of schooling was set to 15, the minimum to 0. For the countries of former Yugoslavia, before 1990, missing data for years of schooling and GDP are the same of Yugoslavia on the whole. To calculate the index for income we take GDP *per capita* in 1990 constant Geary-Khamis dollars PPP (Conference Board 2016). The maximum value is set to 40,000 dollars, corresponding to the upper bound for World *per capita* GDP during the period 1960-2014 in the dataset we used, and the minimum to 100. It can be noticed how UNDP uses gross national income (GNI) from different sources (World Bank, IMF, United Nations Statistics Division (UNSD), United Nations Department of Economic and Social Affairs (UN DESA)) and this leads to a slight difference in relative income level for some countries; more important, the base year for GNI *per capita* PPP changes over time, while, as previously noted, we used 1990 constant international PPP dollars. HDI estimates for twenty-one Mediterranean countries are reported in Table 3.

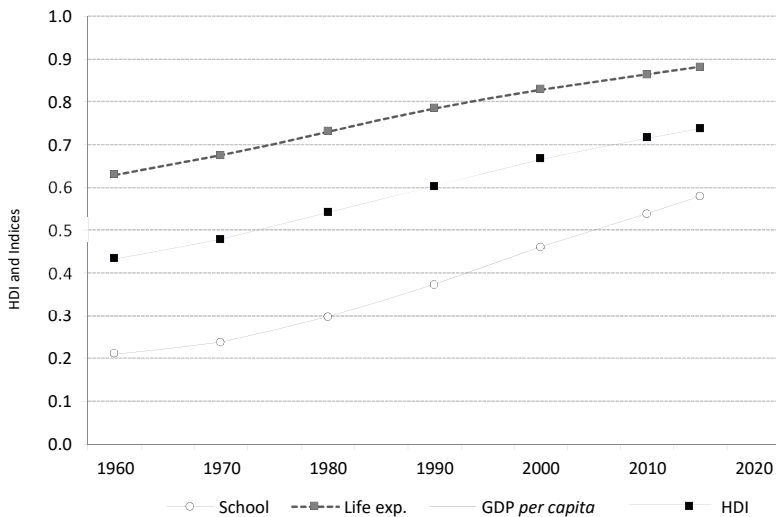
Table 3 HDI for Twenty-One Mediterranean Countries 1960-2015

	1960	1970	1980	1990	2000	2010	2015
Portugal	0.364	0.431	0.523	0.610	0.683	0.712	0.747
Spain	0.475	0.543	0.627	0.672	0.768	0.824	0.807
France	0.532	0.592	0.651	0.716	0.801	0.846	0.877
Italy	0.541	0.593	0.653	0.713	0.772	0.809	0.844
Malta	0.441	0.525	0.615	0.695	0.766	0.817	0.843
Slovenia	0.547	0.612	0.724	0.775	0.813	0.860	0.864
Croatia	0.530	0.586	0.666	0.693	0.719	0.786	0.779
Bosnia and Herzegovina	0.464	0.532	0.619	0.616	0.709	0.772	0.742
Serbia	0.465	0.533	0.608	0.648	0.644	0.722	0.724
Macedonia, FYR	0.465	0.533	0.595	0.635	0.670	0.727	0.697

Albania	0.358	0.430	0.512	0.607	0.664	0.726	0.731
Greece	0.580	0.601	0.647	0.708	0.742	0.808	0.769
Turkey	0.272	0.337	0.413	0.515	0.583	0.645	0.699
Cyprus	0.486	0.554	0.636	0.728	0.773	0.822	0.830
Syrian Arab Republic	0.254	0.319	0.432	0.517	0.566	0.643	0.554
Israel	0.634	0.683	0.755	0.805	0.849	0.893	0.893
Jordan	0.292	0.366	0.452	0.546	0.635	0.698	0.732
Egypt, Arab Republic	0.197	0.243	0.345	0.442	0.519	0.600	0.622
Tunisia	0.184	0.249	0.366	0.470	0.552	0.634	0.659
Algeria	0.214	0.233	0.338	0.451	0.515	0.571	0.638
Morocco	0.162	0.207	0.286	0.375	0.447	0.512	0.524
Mediterranean	0.433	0.479	0.541	0.603	0.666	0.715	0.729

Source: See text.

Although our sources differ from those used by UNDP (2015, 2016), our estimates are highly correlated to those calculated by UNDP (for the year 1980, $r = 0.97$, for 2000 $r = 0.96$, and for 2015 $r = 0.94$). We report also the HDI for the Mediterranean as a whole by weighting, for each index, national data by the respective population share. It is worthy of note how in all countries the HDI increases over time. Between 2010 and 2015, however, a significant decrease was registered in Syria, due to drop in GDP and the deterioration of health and education conditions determined by the war that involved the country and certainly underreported by the available statistics such as those by the World Bank (2017).

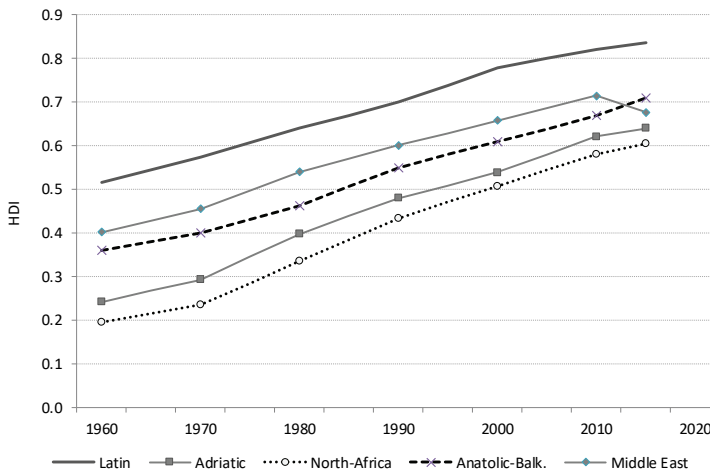


Notes: HDI and indices are weighted by countries' population.

Source: See text.

Figure 7 Trends in HDI and Its Components for the Mediterranean 1960-2015

The trends in three dimensions and in the HDI for the Mediterranean are reported in Figure 7. From 1960 to 2015, the HDI increased by about 68 percent. This rise was the result of the improvement in all of the three indices and especially in schooling, whose (unweighted) average for the Mediterranean as a whole increased from 3.4 to 9.4 years. Life expectancy as well rose on average from 60 to about 78 years.



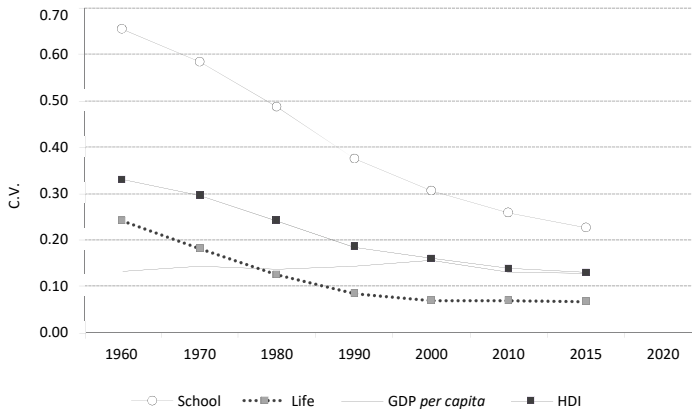
Notes: See in the Notes to Figure 4 the countries included in the five areas.

Source: See text.

Figure 8 Trends in HDI in Five Mediterranean Regions 1960-2015

Figure 8 outlines the trends in the HDI for five Mediterranean regions. Regional estimates have been calculated by weighting national data by the share of the respective population on regional total and, then, computing the dimension indices according to the methodology described above. Between 1960 and 2015, the HDI improved in all regions, although remarkable differences in levels continue to exist. According to our estimates, North Africa is the region with lower HDI: in 2015 its value was 0.60. According to the UNDP classification, this region falls in the range of medium HDI countries. The relatively high HDI of the Middle East – similar to that of the Anatolic-Balkan area – is mainly due to the inclusion of Israel in the region. It can be seen how, after the increase of previous decades, in the period 2010-2015 the HDI of the Middle East drops (mainly for the effect of the war in Syria). In 2015, the Middle East was included in the range of medium-HDI nations, while the Anatolic-Balkan regions in the range of high HDI nations, according to the UNDP (2016) classification. With a value of 0.84, the Latin region falls, instead, into the range of very-high HDI.

Given the remarkable gains by the less developed regions, inequality in HDI notably diminished; such as summarised by the coefficient of variation in HDI and in each of the component indices for the 21 countries, according to the concept of σ -convergence (Figure 9). It is striking to see how convergence in HDI was mainly driven by the reduction of disparities in education and, to a lesser extent, in life



Notes: Inequality is measured by the coefficient of variation (unweighted) of HDI and of each index.

Source: See text.

Figure 9 Inequality in HDI and Its Indices among Twenty-One Mediterranean Countries 1960-2015

expectancy, while the inequalities in income increased during the decades 1960-2000 and later decreased. Overall, with respect to HDI, Mediterranean countries became more similar over time. This result depends, at least in part, on the standard procedure used in the calculation of any HDI, where a similar weight is attributed to all of the indicators. We could question if the gains in life expectancy or education can be placed on the same footing, in the standard of living, of the increase in economic conditions as measured by income. Is the value of one year in life expectancy or literacy comparable to the monetary value of income? Furthermore, both life expectancy and literacy have a ceiling and must be consistent with the biology of the human species, while income is not.

2.2 An Inequality-Adjusted Human Development Index

For the last years of our investigation, we can improve our estimates of social disparity through the elaboration of an Inequality-Adjusted Human Development Index (IHDI). Such as any average, in fact, the three dimensions of the HDI conceal disparities in human development across the population within the same country (Sabina Alkire and James Foster 2010). Whenever such disparities are included, on the World scale the HDI registers a loss of 23 percent. The formula used to calculate the IHDI in the Mediterranean countries is the following one (Equation 4):

$$IHDI = [(1 - A_h) \cdot I_h \cdot (1 - A_e) \cdot I_e \cdot (1 - A_i) \cdot I_i]^{(\frac{1}{3})}. \quad (4)$$

The inequality in each dimension (health, education and income) is estimated through the Atkinson inequality measure A (Atkinson 1970). Similar inequality measures have been worked out by UNDP (2013). For life expectancy, the coefficient is computed through the current inequality in mortality patterns. Inequality in education is proxied by inequality in years of schooling, the adult population, while

inequality in income is provided by Gini indices. We can then estimate the loss due to inequalities in each dimension as (Equation 5):

$$Loss = 1 - \frac{IHDI}{HDI}. \quad (5)$$

We see in Table 4 that, in the Mediterranean, the IHDI is 13.5 percent lower than the HDI. In Morocco and Egypt, we register the main losses due to inequality. On the whole, countries with less human development also have more dimensional inequality and thus larger losses in human development due to inequality, while people in developed countries reveals the least inequality in human development.

Table 4 HDI, IHDI and Loss due to Inequality in 2013

	HDI	IHDI	Loss (%)
Portugal	0.747	0.672	10.1
Spain	0.805	0.717	10.9
France	0.861	0.783	9.0
Italy	0.822	0.725	11.9
Malta	0.819	0.751	8.3
Slovenia	0.859	0.809	5.8
Croatia	0.777	0.690	11.2
Bosnia and Herzegovina	0.708	0.633	10.6
Serbia	0.716	0.645	9.9
Macedonia, FYR	0.694		
Albania	0.756	0.655	13.4
Greece	0.798	0.713	10.6
Turkey	0.687	0.579	15.8
Cyprus	0.828	0.737	11.0
Syrian Arab Republic	0.613	0.483	21.2
Israel	0.894	0.798	10.7
Jordan	0.722	0.588	18.6
Egypt, Arab Republic	0.603	0.459	24.0
Tunisia	0.640		
Algeria	0.623		
Morocco	0.524	0.369	29.7
Mediterranean	0.725	0.627	13.5

Source: See text and World Bank (2016).

3. Inequality in Political Rights

3.1 The Role of Institutions

The role of political institutions in economic development has been widely recognized by scholars; although the results on their consequences in terms of standard of living are not conclusive. Some countries' experience shows, in fact, how economic growth can flourish under different political institutions; non-democratic regimes included (Barro 1996). There is, however, a growing evidence that democracy fulfils a positive and sizeable effect on growth (Elias Papaioannou and Gregorios Siourounis 2008; José Antonio Cheibub and James R. Vreeland 2011; Daron Acemoglu et al. 2014). The

nexus between democracy and human development is, at least theoretically, less uncertain. Since democratic systems empower people, including the poor, the prevailing view is that elected governments are more concerned with people interests than the autocratic ones (David A. Lake and Matthew A. Baum 2001). Empirical studies, mainly based on cross-countries regressions, reached, however, mixed conclusions. While some of them confirm this view (John Gerring, Strom C. Thacker, and Rodrigo Alfaro 2012), others find that the correlation between democracy and human development, differently measured, is weak or totally absent (Michael Ross 2006). In agreement with the fundamental approach by Sen (1999), we can argue, however, that democratic achievements reflect human development by themselves, regardless of their possible effects on specific human indicators, such as life expectancy or education (UNDP 2002). This concept has been clearly stated by Ronald Inglehart and Christian Welzel (2005, p. 152): “Human development advances with the growth of three components: (1) objective capabilities, based on socio-economic resources, that enable people to act according to their own choices; (2) subjective motivations, based on self-expression values, that emphasize acting according to one’s autonomous choices; and (3) legal entitlements, based on civil and political liberties, that allow people to act on the basis of their autonomous choices”.

In order to take democracy achievements in the Mediterranean countries into account, we introduce a modified HDI that includes political institutions as a fourth dimension. To measure institutions, we used the Polity 2 variable drawn from the Center for Systemic Peace (CSP 2017)⁷ Polity IV Dataset (Monty G. Marshall, Ted Robert Gurr, and Keith Jagers 2017). Polity 2 quantifies the extent to which authoritarian or democratic regimes are institutionalized in a given country, summarising some key features of executive recruitment, constraints on executive authority and political competition. Compared to different databases on institutions and political regimes, Polity IV Dataset covers a very long period (from 1800 to 2016) for a number of countries. In this dataset, political regimes are scored on a scale of 21-points ranging from -10 for full autocracy, to 10 for full democracy. The Polity 2 scores of Mediterranean countries show for example how, in 2015, Syria was classified as an “autocracy” (-9), Morocco and Egypt (-4) as “closed anocracies”, Algeria (2) as “open anocracy”, according to the definition of anocratic systems as neither fully democratic nor fully autocratic (Polity 2 classifications of Mediterranean countries in the period 1960-2015 are reported in Table A1 in the Appendix).

3.2 Institutional Inequality in the Mediterranean

In order to add political regimes’ scores in the HDI, we transformed Polity 2 values by applying the formula $(\text{Polity 2 score} + 11)/21$, so obtaining a scale of 21 positive scores with 1 as the maximum value. This transformation allows obtaining an HDI adjusted for political institutions (HDI-P) computed as the geometric average of four indices (Equation 6):

⁷ Center for Systemic Peace (CSP). 2017. Polity IV Dataset. <http://www.systemicpeace.org/inscrdata.html> (accessed September 20, 2017).

$$HDI-P = (I_{health} \cdot I_{education} \cdot I_{income} \cdot I_{polity})^{\left(\frac{1}{4}\right)}. \quad (6)$$

Table 5 Polity-Adjusted HDI (HDI-P) 1960-2015

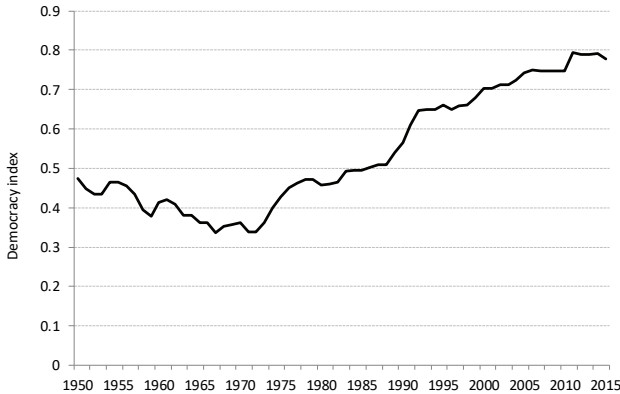
	1960	1970	1980	1990	2000	2010	2015
Portugal	0.261	0.296	0.608	0.690	0.751	0.775	0.822
Spain	0.378	0.418	0.696	0.743	0.821	0.865	0.851
France	0.582	0.658	0.707	0.769	0.836	0.871	0.895
Italy	0.631	0.676	0.727	0.776	0.824	0.853	0.881
Slovenia	0.420	0.457	0.574	0.604	0.856	0.893	0.896
Croatia	0.411	0.443	0.539	0.597	0.762	0.824	0.819
Bosnia and Herzegovina	0.371	0.412	0.510	0.508			
Serbia	0.372	0.412	0.503	0.528		0.764	0.776
Macedonia, FYR	0.372	0.412	0.495	0.520	0.702	0.778	0.754
Albania	0.257	0.295	0.336	0.598	0.688	0.777	0.781
Greece	0.611	0.451	0.703	0.771	0.799	0.852	0.821
Turkey	0.363	0.431	0.376	0.601	0.642	0.693	0.691
Cyprus	0.567	0.618	0.712	0.788	0.825	0.864	0.819
Syrian Arab Republic		0.236	0.296	0.339	0.431	0.474	0.357
Israel	0.710	0.742	0.800	0.839	0.885	0.918	0.919
Jordan	0.221	0.262	0.257	0.483	0.575	0.600	0.622
Egypt, Arab Republic	0.195	0.229	0.314	0.379	0.427	0.535	0.532
Tunisia	0.156	0.217	0.262	0.415	0.503	0.540	0.703
Algeria		0.186	0.247	0.445	0.477	0.582	0.633
Morocco	0.187	0.170	0.241	0.294	0.382	0.423	0.496
Mediterranean	0.457	0.494	0.552	0.624	0.668	0.716	0.726

Notes: In the Polity IV Dataset (CSP 2017) a special value (-66) is assigned to periods of "foreign interruption". In this case, scores for the variable Polity 2 are treated as "system missing". For the countries of the former Yugoslavia, for the period 1960-1990, we applied the Polity scores of this country.

Source: See text.

The estimates for twenty countries and the Mediterranean as a whole are presented in Table 5. Comparing these data with the HDI, we can appreciate the gains (losses) due to different political regimes. During the period under examination, however, a process of democratization occurred in the Mediterranean. This process is interesting, for example, the Balkan region following the dissolution of Yugoslavia and, as regards Polity IV classifications, also some countries such as Tunisia and Jordan which progressed from autocracy to democracy. On the whole, from 1960 to 2015, the HDI-P for the Mediterranean notably improved, increasing from 0.47 to 0.77 (+64 percent).

This trend suggests a kind of "institutional convergence" among the Mediterranean nations. The process of democratisation is summarized in Figure 10 that reports the trend of the average of the Polity 2 index for the Mediterranean countries. This trend is similar to that for the whole World, where the number of democratic countries notably increased during the second half of the twentieth century: actually, it doubled since the 1980s until now (Barbara Wejnert 2014).



Notes: Average of the normalized Polity 2 variable in 22 Mediterranean countries (Libya and Lebanon included).

Source: Our calculations from CSP (2017) Polity IV Dataset.

Figure 10 The Diffusion of Democracy in the Mediterranean 1950-2015

The causes of the diffusion of democratic institutions are diverse. According to the modernization theory (Seymour Martin Lipset 1959), it is fundamentally due to socio-economic factors: increasing income and education, the formation of a middle class, the transformation of social values associated with cultural and institutional changes. Regardless of the proximate causes, in the Mediterranean, democratization and economic development went hand in hand. In the 1970s, democracy progressed in southern European states (Portugal, Spain and Greece); in the 1990s, a democratic transition occurred in the Balkan; more recently, on the wave of the Arab Spring, a request of more representative political systems emerged in North Africa and Middle East (Ansani and Daniele 2012; Michael Robbins 2015). While in some countries, as in Tunisia, changes toward more representative institutions have occurred, in others, revolutionary waves engendered uncertain outcomes or, as in the case of Syria, were followed by instability and conflicts.

4. Economic and Socio-Political Convergence

A comparison of our results for economic and socio-political inequality in the Mediterranean reveals that inequality is in 2014-2015 deeper from an economic than socio-political viewpoint. In 2015, *per capita* GDP of the richest economy in the hierarchy (France) was about 6 times that of the poorest (Algeria), while HDI in the first country of the hierarchy (Israel) was about 1.6 times that of the lowest (Syria) and HDI-P in the top nation (again Israel) was 2.4 times that of the bottom (Syria).

In order to specify the trend of inequality, we use the ordinary procedure to test absolute β -convergence (Barro and Sala-i-Martin 1992). On the basis of the previous analysis, we estimated the following Equation (7):

$$gy_{T-t} = \alpha + \beta_i \ln y_t + \varepsilon_i, \quad (7)$$

where the yearly rate of growth of *per capita* GDP y , is regressed on the log of its

initial level. Since disparities increased in the Mediterranean between 1950 and 2000 and diminished from then on, we estimated the equations for the period 1950-2000 and for 2000-2015. The results of the regressions confirm our previous analysis (*t-stat* in brackets):

$$gy_{1950-2000} = 0.52 + 0.31\ln y_{1950} + \varepsilon_i, \quad (8)$$

$$R^2 = 0.01, t\text{-stat } (0.532), n = 21,$$

$$gy_{2000-2015} = 14.6 - 1.49\ln y_{2000} + \varepsilon_i, \quad (9)$$

$$R^2 = 0.39, t\text{-stat } (-3.53), n = 21.$$

While in Equation (8), that is in the period 1950-2000, the coefficient β is not significant and has a positive sign that indicates divergence, Equation (9) confirms a process of convergence in *per capita* GDP among Mediterranean economies. As regards HDI and HDI-P, previous analysis shows how inequalities diminished over the entire period 1960-2015. Thus, for the period under examination, we regressed the rates of growth of HDI and HDI-P on their initial levels (*t-stat* in brackets):

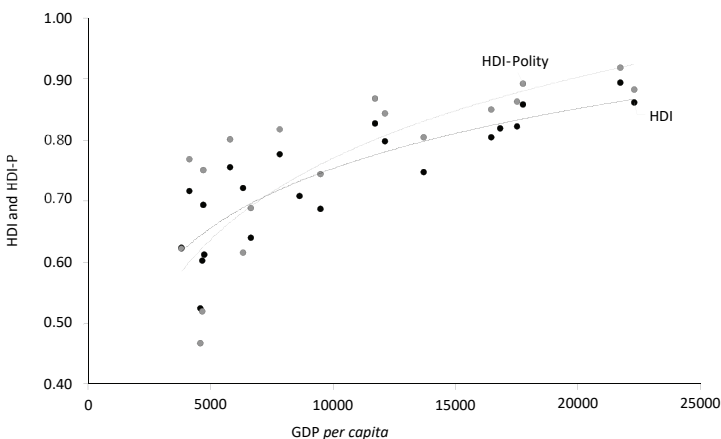
$$gHDI_{1960-2015} = 0.03 - 0.037HDI_{1960} + \varepsilon_i, \quad (10)$$

$$R^2 = 0.92, t\text{-stat } (-13.2), n = 21,$$

$$gHDI\text{-}P_{1960-2015} = 0.03 - 0.035HDI\text{-}P_{1960} + \varepsilon_i, \quad (11)$$

$$R^2 = 0.88, t\text{-stat } (-8.86), n = 17.$$

These results suggest a significant convergence process in both variables. Figure 11 summarises the relationship between inequalities in income and in socio-political indicators. The relationship GDP *per capita* and HDI or HDI-P is not linear and can be proxied by a log regression curve. We see on the horizontal axis that while economic inequality is relatively remarkable, socio-political inequalities are still wide



Notes: GDP *per capita* 1990 \$ PPP.

Source: See text.

Figure 11 Relationship between GDP per capita and Socio-Political Indicators, 2015

in countries with *per capita* GDP lower than 10,000 international 1990 dollars PPP. As soon as *per capita* GDP exceeds 10,000 dollars, socio-political inequality shrinks in the range 0.80-0.90.

5. Conclusion

On a global scale, inequality peaked immediately after the Second World War. From then on it diminished, according to some scholars, while, according to others, it stabilised until about 2000, when inequality among economies started to decline fast (Sala-i-Martin 2006; Milanovic 2012, 2013). At a global level, the decline in (population-weighted) inequality among nations has been mainly the effect of growth acceleration in some populous emerging economies: especially China and, to a lesser extent, Brazil, India and Indonesia.

In this paper, we examined the trends in inequality in the Mediterranean. Compared to previous studies, our analysis differs not only because its focus is on a World region until now scarcely examined, but also for its methodology. We analysed three aspects of inequality: in income, in HDI and in political institutions.

With respect economic inequality, according to our reconstruction, the Mediterranean economies diverged more and more until the end of the last century, and this divergence was mainly driven by the fast growth of the Latin, northern economies. Only from 2000 disparities diminished; primarily because of the slowdown of the leading Latin nations and the higher growth rate of the eastern and southern developing economies.

Furthermore, we computed an HDI for the period 1960-2015. Our analysis shows how cross-countries differences in life expectancy and in education levels notably diminished, fostering a significant convergence in HDI from 1960 onward. Yet disparities in education and, especially, in levels of GDP *per capita* remain remarkable, particularly between the north and the southern banks of the Mediterranean. In 2015, in the most advanced countries – those of the Latin regions – mean years of schooling were about 1.6 times than in North Africa; GDP *per capita* was 4 times higher.

Finally, we focused on inequality in political regimes, computing an HDI that includes the Polity 2 scores for regime types. Between 1960 and 2015, similarly to what happened across the World (Wejnert 2014), a process of democratization occurred in the Mediterranean as well. According to the Polity IV categorization, in 1960, only four Mediterranean countries could be classified as democracies. In 2015, the number increased to fourteen (CSP 2017). In the Mediterranean, socio-economic development and democratization developed in parallel. Does a causal link exist between the trends of these two variables? Even though this question is largely debated by scholars (James A. Robinson 2006), democratic institutions seem to be conducive to economic growth. The channels through which democracy may influence growth are diverse: by providing investments in schooling, health and in public goods and lowering the probability of social unrests (Acemoglu et al. 2014). These explanations are consistent with the trends in socio-economic and institutional inequality observed in the Mediterranean. Overall, despite the progress, the picture of inequalities in the Mediterranean context shows marked differences in development levels and political regimes between the countries on the north and those on the southern bank.

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Appendix

Table A1 Polity 2 Scores for Mediterranean Countries 1860-2015

Country name	1960	1970	1980	1990	2000	2010	2015
Albania	-9	-9	-9	1	5	9	9
Algeria		-9	-9	-2	-3	2	2
Bosnia and Herzegovina	-7	-7	-5	-5			
Croatia	-7	-7	-5	-3	8	9	9
Cyprus	8	7	10	10	10	10	10
Egypt, Arab Republic	-7	-7	-6	-6	-6	-3	-4
France	5	8	8	9	9	9	9
Greece	4	-7	8	10	10	10	10
Israel	10	9	9	9	10	10	10
Italy	10	10	10	10	10	10	10
Jordan	-9	-9	-10	-4	-2	-3	-3
Libya	-7	-7	-7	-7			0
Lebanon	2	5	0			6	6
Macedonia, FYR	-7	-7	-5	-5	6	9	9
Morocco	-5	-9	-8	-8	-6	-6	-4
Portugal	-9	-9	9	10	10	10	10
Serbia	-7	-7	-5	-5		8	9
Slovenia	-7	-7	-5	-5	10	10	10
Spain	-7	-7	9	10	10	10	10
Syrian Arab Republic		-9	-9	-9	-7	-7	-9
Tunisia	-9	-8	-9	-5	-3	-4	7
Turkey	7	8	-5	9	7	7	3

Notes: Polity IV classification is as follow: regimes with scores from -10 to -6 are classified as "Autocracies"; "Anocracies" are regimes with scores between -5 and +5 (including -88 "transitional", -77 "interregnum", and -66 "foreign interruption or occupied" polities); "Democracies" include all regimes with Polity scores between +6 and +10; more specifically, "Democracies" have scores from +6 to +9, "Full democracies", score +10. The variable Polity 2, we used, modifies the combined Polity scores in order to facilitate the use of the Polity regime measures in time-series analyses: cases of "foreign interruption" (-66) are treated as "system missing", while cases of "interregnum" are converted to 0 (see Marshall, Gurr, and Jagers 2017, p. 17).

Source: Marshall, Gurr, and Jagers (2017) Polity IV Project.