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Is "Harmonious Development" Valid for European Union Regions?

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ABSTRACT

This paper analyzes the relationship between income inequality and economic development within 273 Nomenclature of Territorial Units for Statistics European regions. In the study human development index (HDI) values as well as weighted and unweighted gini levels are constructed for each of these regions for 2000-2010 period. Although there is evidence of narrowing income per capita and HDI differences within the regions, the regional disparities steady still in Europe. The results show that before the latest enlargement of European Union, the income inequality and economic development relation was in line with the "harmonious development" goal of the treaties. However, the enlargement process spoils this relation as more resources are devoted to underdeveloped regions of the union.

Keywords: Economic Development, Income Inequality, Regional Analysis
JEL Classifications: D3, O10, O11, O18

1. INTRODUCTION

Since 1980's globalization process formed a more integrated world economy (Cornia, 2011). As the globalization accelerated in 1990's, the structural transformations related with development disturbed the distribution of income[1] (Milanovic, 2002). Accordingly, a far more unequal global economy emerged over the last three decades. All these problems led to a general concern of inequality in the field of development economics for narrowing the gaps between the "developing" and the "developed" regions (Pinto, 2013). Early studies mainly stemmed from the Kuznets hypothesis[2] (Kuznets, 1955). Since then, several empirical studies have been conducted to analyze the relationship between inequality and growth (Wahiba and Weriemmi, 2014). However, various conclusions are derived which leaves the relationship between income inequality and development still a debated issue.

European Union (EU) is a geo-political entity founded upon numerous treaties with its own dynamics. However, the regions with unequal endowments in resources and technology caused the enlargement policy of the union leading to both winners and losers (Petrakos, 2009). After the establishment of the Common Market and the completion of the Economic and Monetary Union, regional inequalities in Europe attracted a widespread interest[3]. In addition, the convergency issue within the union was examined as a measure of success of the integration, development and cohesion policies.

European Economic Community Treaty (EEC Treaty) of 1957 reported that "harmonious development" within Europe can be materialized by reducing regional inequality. As of the Treaty of Maastricht, majority of states in Europe included in the European Union. This regional integration leads to economic convergence[4] in European zone by free and easier trade

1 Chen and Sapshord (2005) and Kanbur and Venables (2005) showed that the inequality within countries is increasing all around the world.

2 Kuznets (1955) claims that inequality rises in early stages of development as industries grow. Then, investing in technology and human capital which becomes the main source of growth causes reduced inequality (Guiga and Rejeb, 2012).

3 Dunford (1993); Neven and Gouyette (1995); Puga (1999); Braunerhjelm et al. (2000); Boldrin and Canova (2001); Crespo-Cuaresma et al. (2002) are some of the studies analyzing the regional disparities.

4 The renewed interest in growth theory (Romer, 1990; Aghion and Howitt, 1998) contributed to literature on economic convergence (Quah, 1997; Barro and Sala-i-Martin, 1991, 1992, 1995; de la Fuente, 2000; Sala-i-Martin, 2006).

(Ben-David 1993, 1996, 2001). But, the European integration experience displayed divergence in living standards between sub-national regions within Europe. After the EEC Treaty, sizable intervention and large regional policy expenditures are materialized for reducing inequality within regions. However, a number of studies concluded that inequalities within regions of Europe rose in spite of economic convergence across states (Puga, 2001). The studies of Kanbur and Venables (2005), Ezcurra and Rapun (2006), and Barrios and Strobl (2009) contributed to the discussion of the relationship between inequality and development in Europe. These studies showed conflicting results depending on the time periods and countries under consideration. The study of Midelfart-Knarvik et al. (2000) concluded that the industrial structures of EU Member States have become increasingly different over the last two decades. Moreover, when compared to that of Greek, Spanish and Portuguese accession, expansion of the EU over 12 new member states increased EU-wide regional inequality. This result is also supported by international and regional economics which explains income disparities due to the endowment of natural resources, factors of production, or technological differences between regions. Stolper-Samuelson theorem (1941) states that owners of relative rich endowment factors may be the winners from integration processes and of relative poor factors may be the losers of theses processes.

In this study the relationship between the economic development and inequality for European 273 regions at Nomenclature of Territorial Units for Statistics[5] (NUTS) 2 level is examined for 2000-2010 period. Unlike previous studies, as a proxy of development regional HDI is calculated according to new calculation formula of the United Nations Development Programme (UNDP) for each NUTS 2 level regions. In addition, as a proxy of inequality the contribution of the regions to income inequality is computed by weighted and unweighted Gini calculation formula. Later, the constructed values and their ranks are compared to examine the relation between inequality and development in European regions. The paper is organized as follows: The next section outlines related literature about inequality and development including convergence, the third section summarizes the inequality and development within European countries, the fourth section describes the data, and the fifth section provides the results of the calculations and estimation results. Finally, the sixth section summarises the findings and provides the conclusions.

2. RELATED LITERATURE

Since 1950's and 1960's unequal disribution of resources is an important concept. Therefore, with the contributions of Kaldor, Williamson and Kuznets, the trade-off between reducing inequality and promoting growth became a debated issue. The relation between income distribution and economic development was examined by several early studies such as Benabou (1996), Perotti (1996), Alesina and Rodrik (1994), Alesina and Perotti (1996) and Persson and Tabellini (1994). They found significant and large negative relation between inequality and growth. Some other studies that contribute to the inequality-economic growth literature are Robinson (1976), Deininger and Squire (1996), Mbaku (1997), Aghion et al. (1999), Forbes (2000), Galbaith and Kum (2003) and Chakrabarty (2004).

In 1990's some of the studies investigating regional convergence also contribute to additional empirical insights into the relationship between the regional income disparities and growth (e.g. Barro and Sala-i-Martin, 1995; Armstrong, 1995; Tondl, 2001; Le Gallo et al., 2003; Arbia and Piras, 2004). The studies that cover early periods, except for 1980s and early 1990s, observed the process of absolute convergence in Europe (Neven and Gouyette, 1995; Magrini, 1999; Boldrin and Canova, 2001). Since the formation of EU increased the volume of trade among member countries (Frankel 1997; Frankel and Rose 2002), economists have started to search whether single European market and an integrated monetary policy stimulate convergence. However, integration theory states two different feasible outcomes: (1) divergence[6] due to increasing factor mobility to more developed markets, (2) convergence in the long run as all members have to satisfy the macroeconomic criteria (Marques and Soukiazis, 1998). Barro and Sala-i-Martin (1991), Neven and Guyette (1995), Armstrong (1995), Ben-David (1993, 2001), Dewhurst and Mutis-Gaitan (1995); Leonardi (1995), Fagerberg and Verspagen (1996), Paci (1997) are the examples of the studies that found evidence of convergence. On the other hand, the studies of Hallett (1981), Arestis and Paliginis (1995) and Slaughter (1997, 2001) displayed divergence within the economies. In addition, there were some mixed results including both convergence and divergence due to methodology, periods and countries included (Dunford, 1996; Marques and Soukiazis, 1998). Since regional convergence is a long run phenomenon, the results of related studies varied in short run and in long run (e.g., Armstrong, 1995; Barro and Salai-Martin, 1995).

3. INEQUALITY AND DEVELOPMENT IN EUROPE

In Graph 1 the Gini coefficient values for EU is given for the period 2003-2012. The Graph 1 gives information about the average distribution of income in former members, new comers and union as a whole.

The Graph 1 shows that after the biggest enlargement of EU in 2004, the Gini coefficient sharply declines between 2004 and 2008 period for the new member 12 states (Cyprus, The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Romania, Bulgaria). However, the inequality within EU including 15 elderly states displays an increase after 2005.

5 The Commission uses as regional statistical concept the spatial classification established by Eurostat on the basis of national administrative units. The current NUTS classification valid from 1 January 2012 until 31 December 2014 lists 97 regions at NUTS 1, 270 regions at NUTS 2 and 1294 regions at NUTS 3 level.

6 According to Dall'erba (2003) the gains of integration have benefited mainly the richest regions within the poorest countries as it increased divergence among regions within a country.

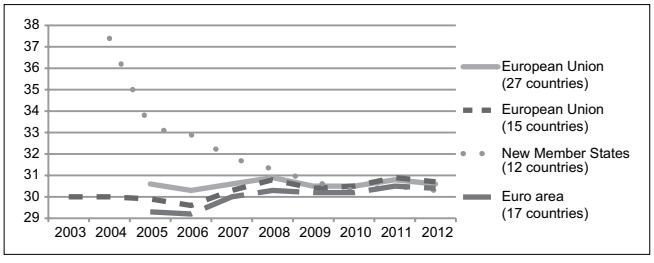
For 2008 onwards, in spite of Eurozone crisis in late 2009, the inequality fluctuations seem to be settling down for all classifications of EU countries. So, the published Gini data of EU shows the combined outcome of government debt crisis with a banking crisis in Eurozone does not disturb the distribution of income within the member states. In addition, the enlargement of EU decreases the inequality for newly comers on account of at least 1% increase of the inequality for the members already within the union.

After clarifying the fact that inequality rises within the EU, Table 1 is formed to show the average change in the income inequality of European countries considering ex-ante and ex-post Eurozone crisis. According to the Table 1, the inequality within most of the new member states decline throughout 2003-2008 period except Cyprus, Bulgaria, Latvia, Malta and Romania. On the other hand, the expansion of EU disturbs the income distribution of Very High Human Developed elderly members[7].

The Eurozone crisis began with the underreporting budget deficit of Greek government. The crisis spread to Ireland and Portugal initially, then effected the other countries within the Eurozone. Because of the crisis, for countries subject to sovereign debt such as Cyprus, Greece, Hungary, Ireland, Latvia, Portugal, Romania and Spain, bailout packages are provided. In addition, as France owned 10% of that Greek debt, the income inequality within the country had a rising trend. Although they still have far more fair distribution than others, Denmark and Sweden faced an increasing trend in inequality. In expansion and Eurozone crisis period, Belgium, Ireland, Portugal, United Kingdom, Norway, Lithuania and Poland had decreasing inequality according to Table 1. On the other hand, by displaying rising inequality Cyprus, Denmark, France, Spain and Sweden are the losers of this integration process and crisis era.

7 Denmark, France, Spain, Sweden, Germany, Finland and Netherlands are classified as Very High Human Developed countries according to Human Development Reports of UN.

Graph 1: GINI coefficient for European Union, 2003-2012



Source: Eurostat

After the discussion of European countries' income inequality, in the Table 2 average annual human development index (HDI) growth rates and the HDI rank of the countries for the year 2012 are given. According to 2012 HDI Rank standings, most of the countries within European region are classified as very high human developed countries and rest are classified as high human developed countries, Moldova is an exception.

According to Table 2, the very high human developed EU countries such as Norway, Germany, Ireland, Iceland, Belgium, Austria, France, Italy, Luxembourg, Greece, Cyprus, Malta, Hungary, Portugal are succeed in promoting human development above the average of the very high developed countries over at least two decades between 1980 and 2000. Turkey, a candidate country for membership of EU accomplishes to stay above the average of high human developed countries' average annual HDI growth and this lasts all three periods. The last column of the table presents the final data about the average annual HDI growth rates for the period 2000-2012. It shows that 18 out of 28 EU member states ensure the human development growth rates higher than the average of the country classifications that they are included in (Netherlands, Ireland, Sweden, Denmark, Belgium, Luxembourg, United Kingdom, Portugal, Croatia, Bulgaria are exceptions). Examining non-EU member countries, Ukraine and Turkey are the countries that are able to grow faster than the high income countries average in Human development.

4. DATA

The data related with income distribution such as annual average population (1000) and regional gross domestic product - million Euro is taken from the Eurostat database for 2000-2010 period. In addition, for calculating HDI levels for each of these NUTS 2 regions, life expectancy at birth data is taken from the Eurostat database. The data that is necessary for HDI calculation such as mean years of schooling years and expected years of schooling years are taken at country level from the human development reports of the UNDP. The methodology of calculation of inequality and human development index are given in Appendix part.

5. INEQUALITY AND DEVELOPMENT ANALYSIS

Before the discussion of the inequality and development phenomenon within Europe, convergence tests are conducted for understanding the success of the integration. The tests results given in Table 3 show that β is significant and negative. This

Table 1: Changes in GINI growth average, 2003-2012

Variables	2003-2008 rising inequality	2003-2008 decreasing inequality
2009-2012 rising inequality	Cyprus[a], Denmark, France, Spain, Sweden	Austria, Croatia[c], Czech Republic[a], Estonia[a], Greece, Italy, Hungary[a], Luxembourg, Slovenia[a], Slovekia[a]
2009-2012 decreasing inequality	Bulgaria[b], Germany, Latvia[a], Iceland, Malta[a], Romania[b], Finland, Switzerland, Netherlands	Belgium, Ireland, Lithuania[a], Poland[a], Portugal, United Kingdom, Norway

Source: Eurostat-Gini coefficient of equalized disposable income, authors own calculations, [a]The new members of EU in 2004, [b]The new members of EU in 2007, The new member of EU in 2013, Note: Norway and Switzerland are not [a]members of EU and Iceland is a candidate for EU. The values for other candidate countries Montenegro, Turkey, The former Yugoslav Republic of Macedonia and Serbia were not available in the database

Table 2: 2012 HDI rank and average annual HDI Growth, 2010

2012 HDI rank	Country name	1980-1990 average annual HDI growth	1990-2000 average annual HDI growth	2000-2010 average annual HDI growth	2000-2012 average annual HDI growth	2012 HDI rank	Country name	1980-1990 average annual HDI growth	1990-2000 average annual HDI growth	2000-2010 average annual HDI growth	2000-2012 average annual HDI growth
1	Norway	0.59	0.79	0.32	0.29	32	Malta	0.59	0.57	0.52	0.46
4	Netherlands	0.52	0.56	0.31	0.28	33	Estonia			0.65	0.62
5	Germany	0.85	0.81	0.53	0.47	35	Slovakia		0.4	0.64	0.57
7	Ireland	0.62	1.04	0.42	0.35	37	Hungary	0.07	1.02	0.48	0.42
7	Sweden	0.38	0.93	0.11	0.12	39	Poland			0.49	0.46
9	Switzerland	0.27	0.49	0.33	0.29	41	Lithuania		0.32	0.68	0.65
13	Iceland	0.58	0.67	0.34	0.33	43	Portugal	1.04	0.93	0.43	0.35
15	Denmark	0.33	0.63	0.34	0.3	44	Latvia	0.35	0.55	0.87	0.82
17	Belgium	0.67	0.79	0.14	0.12	47	Croatia		0.52	0.63	0.54
18	Austria	0.66	0.62	0.51	0.46	56	Romania		0.05	0.99	0.86
20	France	0.75	0.85	0.44	0.38	57	Bulgaria	0.45	0.24	0.77	0.67
21	Finland	0.45	0.54	0.52	0.45	64	Serbia			0.56	0.49
21	Slovenia			0.58	0.48	70	Albania		0.54	0.66	0.59
23	Spain	0.8	1.15	0.43	0.37	78	Ukraine		−0.58	0.85	0.8
25	Italy	0.64	0.78	0.56	0.46	90	Turkey	1.85	1.26	1.04	0.95
26	Luxembourg	0.81	0.78	0.16	0.14	113	Moldova		−0.93	0.96	0.91
26	United Kingdom	0.47	0.7	0.39	0.33	Very high human development*		0.56	0.59	0.4	0.36
28	Czech Republic			0.56	0.48	High human development*		0.81	0.58	0.8	0.72
29	Greece	0.62	0.48	0.67	0.5	Medium human development*		1.38	1.32	1.41	1.29
31	Cyprus	0.86	0.36	0.5	0.41	Low human development*		1.05	0.95	1.82	1.62

Source: UN database, *Very high human developed countries are ranking between 1 and 47, high human developed countries are ranking between 48 and 94 (shaded gray area in the table), medium human developed countries are ranking between 95 and 141, HDI: Human development index

Table 3: Per capita income convergence results for European regions, 2000-2010

Periods included: 10			
Cross-sections included: 272			
Total panel (unbalanced) observations: 2720			
Variable	**Coefficient**	**Standard error**	**t-statistic**
LGDP	−0.034	0.002	−16.99 (0.00)
C	0.361	0.019	18.37 (0.00)
R-squared	0.095	F-statistic	288.58 (0.00)

The values in parenthesis show probabilities

Table 4: HDI convergence results for European regions, 2000-2010

Included observations: 257			
Variable	**Coefficient**	**Standard error**	**t-statistic**
HDI 2000	−0.697	0.018	−38.76 (0.00)
C	0.670	0.014	47.73 (0.00)
R-squared	0.855	F-statistic	1502.03 (0.00)

The values in parenthesis show probabilities

means that the income per capita differences within the regions are narrowing between 2000 and 2010. Therefore, there is a convergence process within the NUTS2 regions of Europe which is in line with the second feasible outcome of the integration theory. Also, the estimated value of β which is 3.4% also indicates the rate at which regions approach to their steady state. Based on this value, it would take nearly 20 years to close the half gap between regions[8]. Similar to Konya and Guisan (2008) Table 4 is formed to understand whether there is a convergence between European Regions as HDI values are considered. Test results show that β takes a significant and negative value which means the HDI values of the regions are also converging.

Next, to find a causal relationship between inequality and HDI growth rate similar to You (2013) the following model is formulated. The model below also gives us a sight about the effect of the membership on HDI performances.

HDI growth = Inequality measure + HDI base year + Elderly member dummy (D1) + New member dummy (D2).

In the analysis two different inequality measures are used namely, weighted gini and unweighted gini. Three time periods are used for understanding the relationship between inequality and development. For longer time period between 2000 and 2010 no significant relationship between inequality and development has been found. However, the results in Table 5 show that the membership to the union has positive effects on the growth of the human development. As an expected outcome being an elderly member state represents greater values as opposed to a newcomer. In 2000-2005 period the unweighted gini displays a negative relationship with human development improvement.

8 Duncan and Fiontes (2006) reports ln(1/2) divided by the respective beta coefficient will give us the years to close half the gap.

Table 5: The effect of inequality on HDI

Variables	2000-2010	2000-2010	2000-2005	2000-2005	2005-2010	2005-2010
Log (HDI2000)	−0.459704* (−29,03)	−0.464517* (−29,23)	−0.365867* (21,59)	−0.368800* (−21,34)		
Log (HDI2005)					−0.165039* (−11,99)	−0.168647* (−12,26)
Log (Unw2005)			−0.007626* (2,77)			
Log (Unw2010)	−0.003225 (−1,22)				0.001700 (1,08)	
Log (W2005)				0.000572 (0,53)		
Log (W2010)		0.001625 (1,64)				0.001374** (2,32)
D1	0.033787** (2,36)	0.034501** (2,42)	0.035046** (2,29)	0.035231** (2,27)	0.003811 (0,45)	0.004598 (0,54)
D2	0.031860** (2,17)	0.030698** (2,09)	0.028882 (1,84)	0.027455 (1,73)	0.005932 (0,68)	0.005715 (0,66)
C	−0.053923** (−2,26)	−0.020293 (−1,28)	−0.086079* (−3,44)	−0.027658 (−1,60)	0.005973 (0,42)	0.002557 (0,27)
R-squared	0,86	0,86	0,75	0,75	0,55	0,56
F statistics	386.61	388.74	196.86	189.45	78.00	80.36

The values in parenthesis show t-statistics, *Denote 1% significance and **Denote 5% significance

This means that within this period increase human development is achieved by lowering the income inequality within the regions. In addition, being an elderly member also improves the human development within the regions. Between 2005 and 2010 there is a positive relation between weighted gini and human development index growth. According to this, increase in inequality leads to a rise in human development. However, this outcome between inequality and development contradicts with the 2000-2005 period results which cause insignificant relationship for a longer period of time (2000-2010). Additionally, in 2005-2010 period both of the membership dummies do not have significant impacts on the development levels of the regions.

These results show that the "harmonious development" by reducing regional inequality within Europe was maintained until the enlargement of the union. Afterwards, this cohesion policy is mainly disturbed by unequal endowment of the regions of the new member states. The sizable regional transfer of European Union funds for the most of the underdeveloped regions causes this disturbation by displaying a positive relation between inequality and human development.

6. CONCLUSION

This paper analyzes the relationship between income inequality and development within 273 NUTS2 European regions. Unlike previous studies, the HDI values, weighted and unweighted gini levels are computed for each of the NUTS2 regions. The general discusssion about the European countries shows that the biggest enlargement of EU in 2004 improves the country level equality in new member states. However, this mainly disturbs the income distribution in elderly members. The Eurozone crises also harm the countries in EU that own the Greek debt. Both integration and Eurozone crises lead to rising inequality in Cyprus, Denmark, France, Spain and Sweden. In addition, the HDI trends of the European countries show that most of the member states ensure the human development growth rates higher than the average of the country classifications.

After the enlargement, HDI seems to be increasing steadily among the new comers because of the social policies consistent with EU norms. But, the integration burden on these countries rises the regional inequality. Among these, Southern European countries had a planned economy with rigid labor characterization for long years. As adaptation to a market oriented economy causes unequal redistribution of income, population weighted regional inequality increases. Therefore, to ensure economic growth and cohesion in EU, it is necessary to activate the labor market reforms of the lisbon strategy for new comers. In addition, the accumulation of economic activity generated by the integration, allowed only the richest regions of a country to converge with higher-income economies. So, this deepens the interregional income disparities within EU countries.

The convergence analysis shows that income per capita and HDI differences among the regions are narrowing. Besides, the relation between inequality and development display different characteristics for different periods. Before enlargement the "harmonious development" is ensured by lower levels of the inequality. However, the enlargement mainly spoils this goal by redistributing the funds of the union to the most of the under developed regions which also contribute to most of the inequality within the union.

The study finds that "harmonious development" in Europe is temporarily disturbed with the lower income of the new comers. Therefore, an equal income distribution will be assured by the effective use of the Cohesion Funds and Structural Funds to support the lowest developed regions of the Europe. This policy will also ensure "harmonious development" and solve the demographic problems based on factor mobility which deepens the regional inequality in the EU. For a further discussion, the validity of the "harmonious development" can be tested and compared for other economic coorperations.

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APPENDIX 1

A.1. Calculating Income Inequality for NUTS 2 Regions of Europe

Income distribution not only is unequal among the quintiles and rural-urban areas but also has regional aspects. Shankar and Shah (2003) introduced two different calculation methods for Gini index, namely unweighted Gini index and weighted Gini index, in order to clarify the disparities among the regions by taking population into consideration. Following Shankar and Shah (2003) the same formulation is used by Adabar (2005), Shaban et. al. (2006), Shah (2008) and Lessmann (2011) that show the regional inequalities. Taking these studies into consideration, similar inequality analysis will be conducted at NUTS 2 level for Europe. The calculation method firstly calculates the inequality within regions and then enables us to reach the inequality at the country level. As we are mainly interested in NUTS 2 level regions, the initial calculations will represent the partial contributions of the regions to the Gini index.

Unweighted Gini index is described as:

$$G_u = \left(\frac{1}{2\bar{y}_u}\right)\frac{1}{n(n-1)}\sum_i^n\sum_j^n |y_i - y_j| \quad (1)$$

Whereas the weighted Gini index, G_w, paying attention to the role of population is described as:

$$G_w = \left(\frac{1}{2\bar{y}}\right)\sum_i^n\sum_j^n |y_i - y_j|\frac{p_i p_j}{P^2} \quad (2)$$

in which:

G_w: The weighted Gini index.

G_u: The unweighted Gini index.

$\bar{y}_u$: The unweighted mean of per capita gross domestic products of regions.

$\bar{y}$: The national mean of per capita gross domestic product.

y_i: Per capita gross domestic products of the region i.

y_j: Per capita gross domestic products of the region j.

n: Number of regions.

P: National population.

p_i: Population region i.

p_j: Population region j.

G_u takes values between 0-1, whereas G_w takes values between 0 - [1-(p_i/p)]. In this scaling, 0 stands for perfect equality. In addition, 1 and 1-(p_i/p) denotes perfect inequality for G_u and G_w, respectively. If the region with small portion of population has greater portion of gross domestic product, the value for perfect inequality for G_w would approach to 1. The calculated Gini value approaching to 1 implies that the income inequality among regions or provinces is increasing.

A.2. Calculating Human Development Index for NUTS 2 Regions of Europe

The first step for calculating Human Development Index is the construction of the sub-indexes, namely Life expectancy index; Education index and Income index. However, the units of the raw data that are used in the calculation process are different. The units of Life expectancy index and Education index are years, whereas the unit of the raw data related with Income index is the per capita Purchasing Power Parity (PPP) United States (US) dollars. In addition, even if the raw data units are the same for Life expentancy index and Education index, the magnitudes of these indicators are dissimilar (UNDP, 2010; UNDP 2013). Identifying each of these sub-indices as dimension index is calculated as:

Dimension Index=(Actual Value - Minimum Value)/(Maximum Value - Minimum Value)

Here the maximum and minimum values are used for indexing the indicators between 0 and 1. The maximum values are chosen as the highest of the observed values of 1980-2011 period and minimum values are determined at the subsistence levels. According to data of UNDESA (2009) and UNDESA (2011), the maximum of the expected life expectancy value is observed as 83.2 years in Japan for the year 2010 and the minimum value is taken as 20 years. Similarly, using the data of Barro and Lee (2010) and UNESCO (2011) the expected years of schooling takes the highest value 20.6 in Australia and mean years of schooling takes the highest value 13.2 in United States for the year 2010. The calculations of the HDI and its sub-components for the year 2010 show that New Zealand has the highest education index level with the value of 0.951. In addition, for determining the highest and lowest values of income level the observed levels of incomes within the studies World Bank (2010) and IMF (2010) are examined. The maximum per capita gross national income (GNI) value is taken as the value of United Arab Emirates which is $108211[1] and $163 (the value attained in Zimbabwe in 2008) is determined as the minimum value.

The dimension index is calculated as geometric average of sub-indices[2]. For the purpose of our study since the income data used in the study is in terms of Euro, in order to calculate the income index, the maximum and minimum values are transformed to Euro using reported PPP data of OECD for the year 2010[3].

A.3. NUTS2 Regions Codes

Austria (AT): AT11: Burgenland(AT), AT12: Niederösterreich, AT13: Wien, AT21: Kärnten, AT22: Steiermark, AT31: Oberösterreich, AT32: Salzburg, AT33: Tirol, AT34: Vorarlberg.

Belgium (BE): BE10: Rég. Bruxelles/Brussels Gewest, BE21: Prov. Antwerpen, BE22: Prov. Limburg (BE), BE23: Prov. Oost-Vlaanderen, BE24: Prov. Vlaams-Brabant, BE25: Prov. West-Vlaanderen, BE31: Prov. Brabant Wallon, BE32: Prov. Hainaut, BE33: Prov. Liège, BE34: Prov. Luxembourg (BE), BE35: Prov. Namur.

Bulgaria (BG): BG31: Severozapaden, BG32: Severentsentralen, BG33: Severoiztochen, BG34: Yugoiztochen, BG41: Yugozapaden, BG42: Yuzhen tsentralen.

Cyprus (CY): CY00: Kypros.

Czech Republic (CZ): CZ01: Praha, CZ02: Stredni, Cechy, CZ03: Jihozápad, CZ04: Severozápad, CZ05: Severovýchod, CZ06: Jihovýchod, CZ07: Střední Morava, CZ08: Moravskoslezsko.

Germany (DE): DE11: Stuttgart, DE12: Karlsruhe, DE13: Freiburg, DE14: Tübingen, DE21: Oberbayern, DE22: Niederbayern, DE23: Oberpfalz, DE24: Oberfranken, DE25: Mittelfranken, DE26: Unterfranken, DE27: Schwaben, DE30: Berlin, DE40: Brandenburg, DE50: Bremen, DE60: Hamburg, DE71: Darmstadt, DE72: Gießen, DE73: Kassel, DE80: Mecklenburg-Vorpommern, DE91: Braunschweig, DE92: Hannover, DE93: Lüneburg, DE94: Weser-Ems, DEA1: Düsseldorf, DEA2: Köln, DEA3: Münster, DEA4: Detmold, DEA5: Arnsberg, DEB1: Koblenz, DEB2: Trier, DEB3: Rheinhessen-Pfalz, DEC0: Saarland, DED2: Dresden, DEE0: Sachsen-Anhalt, DEF0: Schleswig-Holstein, DEG0: Thüringen, DK01: Hovedstaden, DK02: Sjælland, DK03: Syddanmark, DK04: Midtjylland, DK05: Nordjylland.

Estonia (EE): EE00: Eesti EE00: Eesti.

Greece (EL): EL11: Anatoliki Makedonia Thraki, EL12: Kentriki Makedonia, EL13: Dytiki Makedonia, EL14: Thessalia, EL21: Ipeiros, EL22: Ionia Nisia, EL23: Dytiki Ellada, EL24: Sterea Ellada,EL25: Peloponnisos, EL30: Attiki, EL41: Voreio Aigaio, EL42: Notio Aigaio, EL43: Kriti.

Spain (ES): ES11: Galicia, ES12: Principado de Asturias, ES13: Cantabria, ES21: País Vasco, ES22: Comunidad Foral de Navarra, ES23: La Rioja, ES24: Aragón, ES30: Comunidad de Madrid,ES41: Castilla y León, ES42: Castilla-la Mancha, ES43: Extremadura, ES51: Cataluña, ES52: Comunidad Valenciana, ES53: Illes Balears, ES61: Andalucía, ES62: Región de Murcia,ES63: Ciudad Autónoma de Ceuta (ES), ES64: Ciudad Autónoma de Melilla (ES), ES70: Canarias (ES).

Finland (FI): FI19: Länsi-Suomi, FI1B: Helsinki-Uusimaa, FI1C: Etelä-Suomi, FI1D: Pohjois- ja Itä-Suomi, FI20: Åland.

France (FR): FR10: Île de France, FR21: Champagne-Ardenne, FR22: Picardie, FR23: Haute-Normandie, FR24: Centre (FR), FR25: Basse-Normandie, FR26: Bourgogne, FR30: Nord - Pas-de-Calais, FR41: Lorraine, FR42: Alsace, FR43: Franche-Comté, FR51: Pays de la Loire, FR52: Bretagne, FR53: Poitou-Charentes, FR61: Aquitaine, FR62: Midi-Pyrénées, FR63: Limousin, FR71: Rhône-Alpes,

1 1980 value.
2 For detailed information about calculation, see UNDP(2010).
3 According to OECD statistics 1 dollars PPP corresponds to 0.793Euros PPP for the year 2010.

FR72: Auvergne, FR81: Languedoc-Roussillon, FR82: Provence-Alpes-Côte d'Azur, FR83: Corse, FR91: Guadeloupe (FR), FR92: Martinique (FR), FR93: Guyane (FR), FR94: Réunion (FR).

Croatia (HR): HR03: Jadranska Hrvatska, HR04: Kontinentalna Hrvatska.

Hungary (HU): HU10: Közép-Magyarország, HU21: Közép-Dunántúl, HU22: Nyugat-Dunántúl, HU23: Dél-Dunántúl, HU31: Észak-Magyarország, HU32: Észak-Alföld, HU33: Dél-Alföld.

Ireland (IE): IE01: Border, Midland and Western, IE02: Southern and Eastern.

Italy (IT): ITC1: Piemonte, ITC2: Valle d'Aosta/Vallée d'Aoste, ITC3: Liguria, ITC4: Lombardia, ITF1: Abruzzo, ITF2: Molise, ITF3: Campania, ITF4: Puglia, ITF5: Basilicata, ITF6: Calabria, ITG1: Sicilia, ITG2: Sardegna, ITH1: Provincia Autonoma di Bolzano/Bozen, ITH2: Provincia Autonoma di Trento, ITH3: Veneto, ITH4: Friuli-Venezia Giulia, ITI1: Toscana, ITI2: Umbria, ITI4: Lazio.

Lithuania (LT): LT00: Lietuva.

Luxembourg (LU): LU00: Luxembourg.

Latvia (LV): LV00: Latvija.

Malta (MT): MT00: Malta.

Netherlands (NL): NL11: Groningen, NL12: Friesland (NL), NL13: Drenthe, NL21: Overijssel, NL22: Gelderland, NL23: Flevoland, NL31: Utrecht, NL32: Noord-Holland, NL33: Zuid-Holland, NL34: Zeeland, NL41: Noord-Brabant, NL42: Limburg (NL).

Norway (NO): NO01: Oslo og Akershus, NO02: Hedmark og Oppland, NO03: Sør-Østlandet, NO04: Agder og Rogaland, NO05: Vestlande, NO06: Trøndelag, NO07: Nord-Norge.

Poland (PL): PL11: Lódzkie, PL12: Mazowieckie, PL21: Malopolskie, PL22: Slaskie, PL31: Lubelskie, PL32: Podkarpackie, PL33: Swietokrzyskie, PL34: Podlaskie, PL41: Wielkopolskie, PL42: Zachodniopomorskie, PL43: Lubuskie, PL51: Dolnoslaskie, PL52: Opolskie, PL61: Kujawsko-Pomorskie, PL62: Warminsko-Mazurskie, PL63: Pomorskie, PT11: Norte.

Portugal (PT): PT15: Algarve, PT16: Centro (PT), PT17: Lisboa, PT18: Alentejo, PT20: Região Autónoma dos Açores (PT), PT30: Região Autónoma da Madeira (PT).

Romania (RO): RO11: Nord-Vest, RO12: Centru, RO21: Nord-Est, RO22: Sud-Est, RO31: Sud - Muntenia, RO32: Bucuresti - Ilfov, RO41: Sud-Vest Oltenia, RO42: Vest.

Sweden (SE): SE11: Stockholm, SE12: Östra Mellansverige, SE21: Småland med öarna, SE22: Sydsverige, SE23: Västsverige, SE31: Norra Mellansverige, SE32: Mellersta Norrland, SE33: Övre Norrland.

Slovenia (SI): SI01: Vzhodna Slovenija, SI02: Zahodna Slovenija.

Slovakia (SK): SK01: Bratislavský kraj, SK02: Západné Slovensko, SK03: Stredné Slovensko, SK04: Východné Slovensko.

United Kingdom (UK): UKC1: Tees Valley and Durham, UKC2: Northumberland and Tyne and Wear, UKD1: Cumbria, UKD3: Greater Manchester, UKD4: Lancashire, UKE1: East Yorkshire and Northern Lincolnshire, UKE2: North Yorkshire, UKE3: South Yorkshire, UKE4: West Yorkshire, UKF1: Derbyshire and Nottinghamshire, UKF2: Leicestershire, Rutland and Northamptonshire, UKF3: Lincolnshire, UKG1: Herefordshire, Worcestershire and Warwickshire, UKG2: Shropshire and Staffordshire, UKG3: West Midlands, UKH1: East Anglia, UKH2: Bedfordshire and Hertfordshire, UKH3: Essex, UKI1: Inner London, UKI2: Outer London, UKJ1: Berkshire, Buckinghamshire and Oxfordshire, UKJ2: Surrey, East and West Sussex, UKJ3: Hampshire and Isle of Wight, UKJ4: Kent, UKK1: Gloucestershire, Wiltshire and Bristol/Bath area, UKK2: Dorset and Somerset, UKK3: Cornwall and Isles of Scilly, UKK4: Devon, UKL1: West Wales and The Valleys, UKL2: East Wales, UKM2: Eastern Scotland, UKM3: South Western Scotland, UKM5: North Eastern Scotland, UKM6: Highlands and Islands, UKN0: Northern Ireland (UK).

A.4. Calculations for European NUTS2 Regions

Table A4.1: Weighted Gini calculation of Europe using NUTS regions, 2010

Code	Gw	Code	Gw	Code	Gw	Code	Gw	Code	Gw	Code	Gw	Code	Gw	Code	Gw
FR10	0.0126	NL33	0.0020	PL42	0.0012	NO04	0.0009	UKJ3	0.0007	DEB1	0.0006	DE72	0.0004	ITH2	0.0002
UKI1	0.0071	FR82	0.0019	LU00	0.0011	DE92	0.0009	CZ08	0.0007	SI01	0.0006	BE33	0.0004	NO02	0.0002
ITC4	0.0050	ITF4	0.0019	HU32	0.0011	ES42	0.0009	FR42	0.0007	UKC2	0.0005	AT33	0.0004	AT21	0.0002
ES61	0.0037	RO41	0.0018	SK02	0.0011	DEG0	0.0009	PL43	0.0007	FR25	0.0005	EL23	0.0004	ES13	0.0002
DE21	0.0034	HR04	0.0018	BE21	0.0011	FR41	0.0009	UKN0	0.0007	CZ01	0.0005	SE21	0.0004	BE31	0.0002
RO21	0.0032	PL51	0.0018	ES11	0.0011	CZ05	0.0009	CZ02	0.0007	UKE3	0.0005	SE31	0.0004	AT34	0.0002
PL22	0.0029	UKI2	0.0018	SK04	0.0011	UKH1	0.0009	HU23	0.0007	ITF1	0.0005	NO07	0.0004	SE32	0.0002
DE71	0.0029	ITC1	0.0017	FR62	0.0011	PL34	0.0009	FR23	0.0007	ES43	0.0005	SI02	0.0004	MT00	0.0002
DEA1	0.0028	PL11	0.0017	PT17	0.0011	DE13	0.0009	ITG2	0.0007	NL42	0.0005	PT18	0.0004	FR91	0.0002
ES51	0.0027	BE10	0.0017	UKJ2	0.0011	ES70	0.0009	CZ03	0.0007	BE32	0.0005	EL14	0.0004	PT15	0.0002
ITF3	0.0027	PL31	0.0016	DEF0	0.0010	SK03	0.0009	CZ04	0.0007	NL21	0.0005	UKE1	0.0004	DEB2	0.0002
RO31	0.0026	PL32	0.0016	PL62	0.0010	UKM3	0.0009	DE91	0.0007	BE25	0.0005	NO06	0.0004	EL21	0.0002
ES30	0.0026	LV00	0.0015	SE23	0.0010	UKL1	0.0008	UKH2	0.0007	DE22	0.0005	AT32	0.0004	NL34	0.0002
FR71	0.0026	EL30	0.0015	DEA3	0.0010	DE14	0.0008	UKH3	0.0007	DE73	0.0005	FR94	0.0004	UKD1	0.0002
PL12	0.0026	FR30	0.0015	FR81	0.0010	DE25	0.0008	SE22	0.0007	FR72	0.0005	DK02	0.0003	NL13	0.0002
DE11	0.0024	PL63	0.0015	UKG3	0.0010	DEA4	0.0008	NO03	0.0007	ITH4	0.0005	DK05	0.0003	BE35	0.0002
ITI4	0.0023	AT13	0.0015	HU33	0.0010	DK04	0.0008	FR53s	0.0007	AT22	0.0005	ITI2	0.0003	UKM6	0.0002
ITG1	0.0023	PL61	0.0014	UKD3	0.0010	UKE4	0.0008	DE93	0.0007	FR21	0.0005	UKM5	0.0003	FR92	0.0002
PL21	0.0023	BG41	0.0014	DE40	0.0010	NL22	0.0008	DE80	0.0006	UKC1	0.0005	CY00	0.0003	NL23	0.0001
RO22	0.0023	ITI1	0.0014	EL12	0.0010	BG33	0.0008	UKJ4	0.0006	FI1D	0.0005	SE33	0.0003	ITF2	0.0001
SE11	0.0023	DE12	0.0014	ES41	0.0010	EE00	0.0008	HU22	0.0006	ES24	0.0005	BE22	0.0003	EL13	0.0001
IE02	0.0022	RO42	0.0014	NL31	0.0009	DEB3	0.0008	AT12	0.0006	DE23	0.0005	ITH1	0.0003	PT20	0.0001
LT00	0.0022	HU10	0.0014	DE94	0.0009	BG32	0.0008	UKF2	0.0006	DE50	0.0005	EL11	0.0003	FR93	0.0001
PL41	0.0022	DEA5	0.0014	FR24	0.0009	BG31	0.0008	DED2	0.0006	UKG1	0.0005	UKE2	0.0003	ES23	0.0001
RO11	0.0022	DE30	0.0014	ITF6	0.0009	UKF1	0.0008	UKG2	0.0006	UKK2	0.0005	UKF3	0.0003	FR83	0.0001
NO01	0.0021	FI1B	0.0014	NO05	0.0009	DK03	0.0008	ES62	0.0006	FI1C	0.0005	EL25	0.0003	EL42	0.0001
DE60	0.0021	NL41	0.0014	BG34	0.0009	DE27	0.0008	ITC3	0.0006	IE01	0.0005	FR63	0.0003	AT11	0.0001
PT11	0.0020	FR51	0.0013	UKK1	0.0009	UKM2	0.0008	FR26	0.0006	UKK4	0.0004	EL43	0.0003	EL22	0.0001
DEA2	0.0020	BG42	0.0013	HR03	0.0009	HU21	0.0007	NL11	0.0006	FR43	0.0004	ITF5	0.0003	BE34	0.0001
ITH3	0.0020	PT16	0.0013	CZ06	0.0009	PL52	0.0007	BE23	0.0006	DE24	0.0004	SK01	0.0003	PT30	0.0001
ES52	0.0020	UKJ1	0.0013	HU31	0.0009	CZ07	0.0007	UKD4	0.0006	ES12	0.0004	NL12	0.0003	EL41	0.0001
RO12	0.0020	FR61	0.0012	PL33	0.0009	AT31	0.0007	BE24	0.0006	UKL2	0.0004	ES22	0.0002	ITC2	0.0001
DK01	0.0020	RO32	0.0012	DEE0	0.0009	SE12	0.0007	DE26	0.0006	DEC0	0.0004	EL24	0.0002	ES64	0.0000
NL32	0.0020	FR52	0.0012	ES21	0.0009	FR22	0.0007	FI19	0.0006	ES53	0.0004	UKK3	0.0002	ES63	0.0000
Weighted Gini Index: 0.269														FI20	0.0000

Table A4.2: Unweighted Gini calculation of Europe using NUTS Regions, 2010

Code	Gu	Code	Gu	Code	Gu	Code	Gu	Code	Gu	Code	Gu	Code	Gu	Code	Gu
UKI1	0.0043	PL31	0.0014	HR03	0.0011	DE25	0.0009	EL22	0.0008	UKC1	0.0007	ES51	0.0007	DED2	0.0007
LU00	0.0041	HU33	0.0014	NO02	0.0011	SI01	0.0009	ES61	0.0008	DE13	0.0007	BE22	0.0007	FR24	0.0007
NO01	0.0034	FI20	0.0013	HR04	0.0011	EL14	0.0009	DK02	0.0008	UKK1	0.0007	DE80	0.0007	UKL2	0.0007
BE10	0.0028	RO42	0.0013	DK05	0.0011	FR93	0.0009	UKL1	0.0008	DE24	0.0007	CY00	0.0007	FR26	0.0007
NO04	0.0024	HU23	0.0013	PL51	0.0011	SE21	0.0009	ES21	0.0008	UKF3	0.0007	PT30	0.0007	UKH1	0.0007
DK01	0.0022	PL34	0.0013	EE00	0.0011	SE22	0.0009	DE22	0.0008	FR82	0.0007	FR92	0.0007	FR83	0.0007
DE60	0.0022	PL62	0.0013	AT34	0.0011	EL11	0.0009	FI19	0.0008	FI1C	0.0007	DEB1	0.0007	PT17	0.0007
NO05	0.0021	UKM5	0.0013	SE32	0.0011	PT18	0.0009	DE92	0.0008	ES70	0.0007	FR51	0.0007	DEB2	0.0007
SE11	0.0021	NO03	0.0013	BE31	0.0011	PL12	0.0009	UKK3	0.0008	AT12	0.0007	UKN0	0.0007	FR63	0.0007
FR10	0.002	PL33	0.0013	CZ04	0.0011	MT00	0.0009	ITF5	0.0008	NL12	0.0007	ES12	0.0007	UKK2	0.0007
NL11	0.0019	IE02	0.0013	SK02	0.0011	DE14	0.0009	NL22	0.0008	UKJ2	0.0007	FR61	0.0007	UKF1	0.0007
FI1B	0.0017	PL52	0.0013	CZ07	0.0011	PT20	0.0009	FR71	0.0008	ITG2	0.0007	BE32	0.0007	UKM3	0.0007
NO06	0.0016	AT32	0.0013	AT33	0.001	SE31	0.0009	EL43	0.0008	UKH2	0.0007	FR62	0.0007	FR22	0.0007
AT13	0.0016	PL61	0.0013	NL41	0.001	DEA2	0.0009	DEA4	0.0008	ITI1	0.0007	DE40	0.0007	FR52	0.0007
BG31	0.0016	PL43	0.0013	NL33	0.001	EL12	0.0009	ITI4	0.0008	FR42	0.0007	DEE0	0.0007	FR41	0.0007
BG32	0.0016	PL21	0.0013	CZ05	0.001	SE12	0.0009	DE91	0.0008	ITC1	0.0007	ITF1	0.0007	BE33	0.0007
BG42	0.0016	DK04	0.0013	SE23	0.001	NL42	0.0009	ES30	0.0008	DEA5	0.0007	FR23	0.0007	IE01	0.0007
RO21	0.0016	LV00	0.0012	UKJ1	0.001	EL41	0.0009	ITH3	0.0008	UKG2	0.0007	EL30	0.0007	UKE2	0.0007
NO07	0.0015	PL42	0.0012	CZ08	0.001	ES43	0.0009	EL13	0.0008	DE94	0.0007	DE93	0.0007	FR81	0.0007
BG33	0.0015	SK04	0.0012	DEA1	0.001	HU10	0.0008	AT22	0.0008	DE72	0.0007	NL13	0.0007	EL42	0.0007
BG34	0.0015	BG41	0.0012	CZ03	0.001	EL25	0.0008	DE73	0.0008	ES52	0.0007	UKK4	0.0007	FR30	0.0007
RO41	0.0015	LT00	0.0012	BE24	0.001	DE23	0.0008	ES42	0.0008	DEA3	0.0007	UKM6	0.0007	UKG1	0.0007
RO22	0.0015	HU21	0.0012	CZ02	0.001	NL21	0.0008	EL24	0.0008	UKE3	0.0007	UKC2	0.0007	UKD1	0.0007
DE21	0.0015	PL11	0.0012	CZ06	0.001	ITF3	0.0008	BE23	0.0008	UKE1	0.0007	UKF2	0.0007	AT11	0.0007
RO31	0.0015	DK03	0.0012	PT11	0.001	ITF6	0.0008	SK01	0.0008	ITF2	0.0007	DEF0	0.0007	ES53	0.0007
NL31	0.0015	SE33	0.0012	DE12	0.001	CZ01	0.0008	ITH4	0.0008	ES63	0.0007	ES41	0.0007	FR25	0.0007
RO11	0.0014	PL63	0.0012	AT31	0.001	ITH2	0.0008	ES64	0.0008	UKJ3	0.0007	BE34	0.0007	FR53	0.0007
DE71	0.0014	BE21	0.0012	ITC2	0.001	DE26	0.0008	FR94	0.0008	UKD4	0.0007	ES23	0.0007	BE35	0.0007
RO12	0.0014	HU22	0.0012	PT16	0.001	BE25	0.0008	ES22	0.0007	FI1D	0.0007	UKH3	0.0007	FR72	0.0007
HU31	0.0014	PL41	0.0012	ITC4	0.001	PT15	0.0008	DE30	0.0007	ES11	0.0007	FR21	0.0007	ITI2	0.0007
DE50	0.0014	DE11	0.0011	EL21	0.0009	ITG1	0.0008	DEC0	0.0007	ITC3	0.0007	ES24	0.0007	UKG3	0.0007
HU32	0.0014	ITH1	0.0011	RO32	0.0009	ITF4	0.0008	AT21	0.0007	UKM2	0.0007	NL23	0.0007	UKD3	0.0007
NL32	0.0014	SK03	0.0011	EL23	0.0009	DE27	0.0008	DEB3	0.0007	DEG0	0.0007	ES13	0.0007	UKE4	0.0007
PL32	0.0014	PL22	0.0011	NL34	0.0009	FR91	0.0008	ES62	0.0007	SI02	0.0007	UKJ4	0.0007	UKI2	0.0007
Unweighted Gini index: 0.268														FR43	0.0007

Table A4.3: HDI calculation results for NUTS2 Regions, 2010

Code	HDI	Code	HDI	Code	HDI	Code	HDI	Code	HDI	Code	HDI	Code	HDI	Code	HDI	Code	HDI
NO01	0.968	DK05	0.907	DE72	0.897	FR51	0.888	FR25	0.877	BE34	0.864	EL25	0.850	PL12	0.816	PL33	0.772
NO05	0.956	NL21	0.907	NL23	0.897	BE23	0.887	FR72	0.876	UKH1	0.863	UKE4	0.850	SK02	0.813	PL62	0.769
NO04	0.954	NL42	0.906	FR71	0.896	ITH4	0.887	DEE0	0.876	EL22	0.862	ITF3	0.849	RO32	0.810	BG41	0.769
NO06	0.946	DE25	0.906	ITC4	0.896	FR42	0.887	DE80	0.876	ITF4	0.861	UKD3	0.847	HU22	0.806	HU31	0.768
NO07	0.941	DE13	0.906	DE94	0.896	FR61	0.886	FR63	0.876	UKK2	0.860	UKF3	0.846	PT15	0.805	PL31	0.765
NO03	0.937	DE26	0.905	ES21	0.895	BE22	0.886	AT12	0.874	UKI2	0.860	EL12	0.846	SK03	0.802	RO42	0.758
NO02	0.931	NL22	0.905	AT32	0.895	ES24	0.886	EL30	0.873	UKF2	0.859	UKG2	0.846	PT30	0.798	RO12	0.754
IE02	0.930	ITH1	0.905	LU00	0.895	AT31	0.885	FR41	0.873	FR91	0.859	UKC2	0.846	HU21	0.796	RO11	0.746
DE60	0.929	DEA2	0.905	DE24	0.895	ITC1	0.884	FR92	0.873	UKE2	0.859	UKK3	0.846	PT18	0.794	RO31	0.742
SE11	0.928	SE21	0.905	ITH2	0.895	FI1C	0.883	ES11	0.873	ES61	0.858	UKE1	0.845	PT16	0.794	RO22	0.740
NL31	0.925	SE32	0.905	DEC0	0.894	DED2	0.883	ITF1	0.872	SI01	0.858	UKN0	0.844	PL51	0.794	RO41	0.738
NL11	0.925	DE27	0.904	CZ01	0.894	ITC3	0.883	EL42	0.871	EL24	0.858	CZ06	0.844	PT11	0.793	RO21	0.722
DE21	0.924	SE22	0.904	DEB1	0.894	DE93	0.882	ES42	0.871	UKG1	0.858	EL14	0.844	SK04	0.792	BG33	0.717
FR10	0.923	SE12	0.904	DEA3	0.893	ES41	0.881	ES12	0.870	EL43	0.858	EL23	0.843	PL41	0.792	BG34	0.715
NL32	0.923	DEA1	0.904	AT34	0.893	UKJ1	0.881	UKJ2	0.870	ES63	0.858	UKE3	0.842	PL63	0.790	BG42	0.714
DE71	0.922	NL12	0.903	DK02	0.893	FR83	0.881	ES52	0.870	ITF6	0.858	UKD4	0.842	PL22	0.789	BG32	0.705
DK01	0.922	IE01	0.903	ITC2	0.893	FR24	0.881	ES70	0.870	BE32	0.857	UKM3	0.842	LT00	0.786	BG31	0.697
BE10	0.919	DE73	0.902	DEB2	0.892	FR53s	0.880	ES64	0.870	EL13	0.857	FR93	0.840	LV00	0.786		
DE11	0.918	DE23	0.901	DEA5	0.892	FI1D	0.880	UKK1	0.869	UKL2	0.856	UKC1	0.840	PL21	0.785		
FI20	0.917	DEA4	0.901	AT33	0.892	DE40	0.880	FR22	0.869	ES43	0.856	CZ03	0.840	HR03	0.785		
UKI1	0.915	BE21	0.901	AT13	0.892	ITI2	0.880	ITF2	0.869	UKK4	0.856	CZ02	0.839	PT20	0.782		
NL41	0.915	SE31	0.901	BE25	0.891	FR26	0.880	BE33	0.868	UKM2	0.855	HU10	0.839	HU23	0.780		
NL33	0.914	DE22	0.901	FR82	0.891	ES53	0.880	UKJ3	0.868	ITG1	0.855	CY00	0.838	HU33	0.779		
DK04	0.913	DE92	0.900	ITH3	0.891	FR43	0.879	ITG2	0.868	UKH3	0.855	EL11	0.837	PL42	0.779		
DE50	0.913	ES30	0.900	DEF0	0.891	DEG0	0.879	ES62	0.868	FR94	0.855	CZ05	0.837	PL52	0.778		
DE12	0.912	DEB3	0.900	FI19	0.890	AT22	0.879	SK01	0.868	UKJ4	0.853	UKL1	0.835	PL43	0.777		
NL34	0.911	BE24	0.900	ES23	0.889	FR23	0.878	FR30	0.867	UKF1	0.853	CZ07	0.833	HR04	0.777		
DE14	0.911	ES22	0.899	FR62	0.889	ES13	0.878	UKH2	0.867	UKD1	0.853	CZ08	0.830	PL11	0.776		
FI1B	0.909	DE91	0.899	SI02	0.888	FR21	0.878	BE35	0.867	EL21	0.852	MT00	0.829	PL61	0.775		
SE33	0.909	BE31	0.899	ES51	0.888	FR81	0.878	UKM5	0.867	EL41	0.851	EE00	0.824	HU32	0.775		
DK03	0.909	DE30	0.898	ITI4	0.888	FR52	0.878	AT11	0.866	UKG3	0.851	CZ04	0.823	PL34	0.774		
SE23	0.909	NL13	0.898	ITI1	0.888	AT21	0.877	ITF5	0.864	UKM6	0.850	PT17	0.818	PL32	0.773		

HDI: Human development index

Table A4.4: HDI, unweighted Gini, weighted Gini ranks

Codew	HDI	Gw	Gu	Code	HDI	Gw	Gu	Code	HDI	Gw	Gu	Code	HDI	Gw	Gu	Code	HDI	Gw	Gu
NO01	1	26	3	DE91	61	148	152	DEG0	121	106	203	UKK4	181	198	225	LT00	241	23	56
NO05	2	94	8	BE31	62	243	77	AT22	122	187	156	UKM2	182	130	202	LV00	242	47	52
NO04	3	103	5	DE30	63	59	166	FR23	123	144	221	ITG1	183	18	133	PL21	243	19	50
NO06	4	216	13	NL13	64	253	224	ES13	124	242	237	UKH3	184	150	233	HR03	244	97	69
NO07	5	211	19	DE72	65	205	190	FR21	125	188	234	FR94	185	218	164	PT20	245	260	114
NO03	6	152	43	NL23	66	257	236	FR81	126	83	257	UKJ4	186	156	238	HU23	246	143	39
NO02	7	240	70	FR71	67	14	148	FR52	127	68	252	UKF1	187	127	249	HU33	247	85	36
IE02	8	22	45	ITC4	68	3	98	AT21	128	241	168	UKD1	188	252	261	PL42	248	69	53
DE60	9	27	7	DE94	69	91	189	FR25	129	174	264	EL21	189	250	99	PL52	249	132	46
SE11	10	21	9	ES21	70	102	141	FR72	130	185	267	EL41	190	269	120	PL43	250	140	49
NL31	11	90	26	AT32	71	217	47	DEE0	131	101	219	UKG3	191	84	269	HR04	251	39	71
NL11	12	165	11	LU00	72	70	2	DE80	132	155	207	UKM6	192	255	226	PL11	252	43	58
DE21	13	5	24	DE24	73	200	174	FR63	133	231	247	EL25	193	230	123	PL61	253	52	48
FR10	14	1	10	ITH2	74	239	129	AT12	134	158	179	UKE4	194	120	271	HU32	254	71	32
NL32	15	34	33	DEC0	75	203	167	EL30	135	48	222	ITF3	195	11	126	PL34	255	110	40
DE71	16	8	28	CZ01	76	175	128	FR41	136	107	253	UKD3	196	86	270	PL32	256	46	34
DK01	17	33	6	DEB1	77	171	211	FR92	137	256	210	UKF3	197	229	175	PL33	257	100	44
BE10	18	44	4	DEA3	78	82	192	ES11	138	74	200	EL12	198	88	117	PL62	258	80	41
DE11	19	16	65	AT34	79	244	75	ITF1	139	177	220	UKG2	199	161	188	BG41	259	53	55
FI20	20	273	37	DK02	80	219	139	EL42	140	264	258	UKC2	200	173	227	HU31	260	99	30
UKI1	21	2	1	ITC2	81	270	96	ES42	141	105	158	UKK3	201	238	145	PL31	261	45	35
NL41	22	61	82	DEB2	82	249	246	ES12	142	201	214	UKE1	202	215	194	RO42	262	56	38
NL33	23	35	83	DEA5	83	58	187	UKJ2	143	78	181	UKN0	203	141	213	RO12	263	32	29
DK04	24	119	51	AT33	84	207	81	ES52	144	31	191	CZ06	204	98	92	RO11	264	25	27
DE50	25	193	31	AT13	85	51	14	ES70	145	112	178	EL14	205	214	105	RO31	265	12	25
DE12	26	55	94	BE25	86	182	131	ES64	146	271	163	EL23	206	208	101	RO22	266	20	23
NL34	27	251	102	FR82	87	36	176	UKK1	147	96	173	UKE3	207	176	193	RO41	267	38	22
DE14	28	116	113	ITH3	88	30	154	FR22	148	136	251	UKD4	208	167	198	RO21	268	6	18
FI1B	29	60	12	DEF0	89	79	229	ITF2	149	258	195	UKM3	209	114	250	BG33	269	122	20
SE33	30	224	60	FI19	90	170	143	BE33	150	206	254	FR93	210	261	106	BG34	270	95	21
DK03	31	128	59	ES23	91	262	232	UKJ3	151	137	197	UKC1	211	189	171	BG42	271	63	17
SE23	32	81	85	FR62	92	76	217	ITG2	152	145	182	CZ03	212	146	89	BG32	272	125	16
DK05	33	220	72	SI02	93	212	204	ES62	153	162	170	CZ02	213	142	91	BG31	273	126	15
NL21	34	181	125	ES51	94	10	205	SK01	154	234	161	HU10	214	57	122				
NL42	35	179	119	ITI4	95	17	151	FR30	155	49	259	CY00	215	223	208				
DE25	36	117	103	ITI1	96	54	184	UKH2	156	149	183	EL11	216	227	109				
DE13	37	111	172	FR51	97	62	212	BE35	157	254	266	CZ05	217	108	84				
DE26	38	169	130	BE23	98	166	160	UKM5	158	222	42	UKL1	218	115	140				
NL22	39	121	147	ITH4	99	186	162	AT11	159	265	262	CZ07	219	133	80				
ITH1	40	226	66	FR42	100	139	185	ITF5	160	233	146	CZ08	220	138	87				
DEA2	41	29	116	FR61	101	66	215	BE34	161	267	231	MT00	221	246	112				
SE21	42	209	107	BE22	102	225	206	UKH1	162	109	243	EE00	222	123	74				
SE32	43	245	76	ES24	103	191	235	EL22	163	266	137	CZ04	223	147	78				
DE27	44	129	135	AT31	104	134	95	ITF4	164	37	134	PT17	224	77	245				
SE22	45	151	108	ITC1	105	42	186	UKK2	165	195	248	PL12	225	15	111				
SE12	46	135	118	FI1C	106	196	177	UKI2	166	41	272	SK02	226	72	79				
DEA1	47	9	88	DED2	107	160	239	UKF2	167	159	228	RO32	227	67	100				
NL12	48	235	180	ITC3	108	163	201	FR91	168	247	136	HU22	228	157	63				
IE01	49	197	255	DE93	109	154	223	UKE2	169	228	256	PT15	229	248	132				
DE73	50	184	157	ES41	110	89	230	ES61	170	4	138	SK03	230	113	67				
DE23	51	192	124	UKJ1	111	65	86	SI01	171	172	104	PT30	231	268	209				
DEA4	52	118	150	FR83	112	263	244	EL24	172	237	159	HU21	232	131	57				
BE21	53	73	62	FR24	113	92	240	UKG1	173	194	260	PT18	233	213	110				
SE31	54	210	115	FR53s	114	153	265	EL43	174	232	149	PT16	234	64	97				
DE22	55	183	142	FI1D	115	190	199	ES63	175	272	196	PL51	235	40	73				
DE92	56	104	144	DE40	116	87	218	ITF6	176	93	127	PT11	236	28	93				
ES30	57	13	153	ITI2	117	221	268	BE32	177	180	216	SK04	237	75	54				
DEB3	58	124	169	FR26	118	164	242	EL13	178	259	155	PL41	238	24	64				
BE24	59	168	90	ES53	119	204	263	UKL2	179	202	241	PL63	239	50	61				
ES22	60	236	165	FR43	120	199	273	ES43	180	178	121	PL22	240	7	68				

HDI: Human development index