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3.2.Comparing income inequality indices between 2010 and 2019 in Greece

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3.2.1. Introduction

The study on income inequality in the EU is largely based on data referring to household income which, by the application of a standard statistical procedure, is converted into individual income. More precisely, the individual *disposable* (after taxes and other contributions have been deducted) income is extracted by an "equivalence scale" generated through a given formula, the outcome of which is used for the allocation of the total household income to its members. These types of scales or *weights* are based on assumptions concerning the number of adults and underage —or economically dependent— members comprising the household. Thus, the term "equivalized disposable income" is better to be interpreted as a statistical measure of real "income", under the assumption that the total household earnings are allocated among its members, irrespective of whether or not they contribute towards its acquisition (economically inactive or unemployed). Over the last few years, the mainstream approach has followed the OECD "modified equivalence scale", adopted also by Eurostat.[1]

As it has also been referred to elsewhere, the current analysis is based on calculations concerning the basic income inequality indices of the personal distribution, as it is extracted by using the data of the sample Survey of Income and Living Conditions (SILC). SILC is independently conducted by each national statistical authority under the supervision of Eurostat. The data collection process follows a common set of rules and methodologies that are applied by all EU countries, thus offering the opportunity of compiling comparable indices for the study of inequality among the relevant economies. Due to the time-consuming process required for collecting, reviewing and completing the data-entry phases, the published survey is marked by a considerable time lag. For example, during the time this article was written, the most recent data available for Greece were derived from the 2020 SILC survey (i.e., publicly available in 2020) referring to the income earned in 2019. In what follows below, the 2019 SILC inequality indices for Greece are compared with those of 2011 (2010 income), while the regional poverty rates are compared with those of 2018 (2017 income).

3.2.2. Inequality indices

The measurement of income inequality is examined with reference to various simplistic or more intricate indices such as the *Gini* coefficient, Mean Logarithmic Deviation (L), Theil (T), Squared Coefficient of Variation (C^2) and the *Atkinson* inequality index – calculated for several values of the inequality-aversion parameter, ε. The above indices have been used in most recent articles concerning the study of income inequality in Europe and in other industrialized countries. The high degree of acceptance among researchers is based on a series of satisfied properties. The most important ones are: a) "anonymity", which states that all permutations of personal labels are regarded as distributionally equivalent,[2] b) the "population principle", stating that an income distribution is to be regarded as equivalent to a distribution formed by replications of it, c) "scale invariance" and d) the "principle of transfers", which states that the new distribution generated by two opposite deformations is more unequal than the original one.[3]

The commonly used inequality indicators mentioned above focus on different aspects of inequality and may provide for a well-balanced analysis of income distribution.[4] Due to their analytical structure and formation,

1. Hagenaars, A., K. de Vos & M.A. Zaidi (1994), *Poverty Statistics in the Late 1980s: Research Based on Micro-data*, Office for Official Publications of the European Communities. Luxembourg.

2. This property requires that the ordering principle uses only the information about the income variable and not about, for example, some other characteristic that may be discernible in a sample.

3. For a detailed presentation, see Cowell F. A. (2000), "Measurement of inequality", in Atkinson A. B. & Bourguignon F. (eds.), *Handbook of Income Distribution*, vol. 1, Amsterdam: North-Holland.

4. See Alfonso H., LaFleur M. & Alacrón D. (2015), "Inequality Measurement", Development Issues No. 2, Development Strategy and Policy Analysis Unit, UN/DESA.

each of these indices portrays a different level of sensitivity on income transfers made in each part of the distribution. Thus, the level of change is expressed through a particular social welfare function.[5] Also, inequality indices do not all respond in the same way to income transfers between groups on opposite ends as they do in other parts of the income distribution. For example, income transfers that take place in the middle parts of the distribution are better expressed through the *Gini* index rather than the *Theil*. Alternatively, when they occur at the highest rankings of income, their effect is displayed more through changes on C^2, whereas the lowest parts are articulated in *L*. Lastly, the *Atkinson* index sensitivity is based on the value of the parameter ε –decided by the researcher. The higher the value of ε, the more sensitive the index is to changes at the lowest end of income distribution. In a similar way, a higher value stands for a greater social willingness to accept lower incomes in exchange for a more equal distribution.

Furthermore, total inequality can also be interpreted and explained through the differences that exist between and within distinct non-overlapping population groups (divided by their employment status, their age or their level of education). This can be done by using a broad family of measures, such as *L*, *T* and C^2, which form the "Generalised Entropy" class of measures and which are known for their feature of decomposability, i.e., breaking total inequality down into its components (population sub-groups) to explain the aggregate.

3.2.3. Main results

Table 3.2.1 depicts the main results of the basic income inequality indices for Greece. All calculations come from the 2011, 2018 and 2020 SILC (referring to incomes of 2010, 2017 and 2019) micro-databases. Between 2010 and 2019, both *Gini* and *Gini (pensions excluded)* appear to have contracted. On the other hand, the *Gini before all transfers* (pensions and others) has increased, reflecting the enduring and augmenting need for social protection. Furthermore, as the last column of Table 3.2.1 indicates, indices that appear to be highly sensitive to the upper edge of the income distribution suggest that the level of inequality has risen. On the other hand, the rest of the indices suggest that the overall level of dispersion of personal incomes has fallen.

Within the same period, the upper bound of the first, poorest, income decile of the population, calculated in current prices, has decreased by 14.3%. In the same manner, the upper bound of the fifth decile of the population has contracted by 20.1% and the ninth, by 24.2%. As a consequence, the total level of distances between deciles has shortened and all incomes have been pressed downwards. This crucial finding, along with the rest of the results, indicate that the dispersion within the upper income groups is greater than that which exists in the lower ones.

Accordingly, the poverty threshold in Greece has also fallen by one-fifth, whereas the official rate of poverty has decreased from 21.4% in 2010 to 17.7% in 2019. An interesting aspect is revealed by investigating the difference between the various rates of poverty. Between 2010 and 2019, the *poverty rate* and the *poverty rate after transfers* (pensions excluded) are decreased, whereas the *poverty rate before all transfers* is estimated to go upwards. The different levels of outcomes that exist between the above-mentioned indices underline the importance of social transfers in adjusting the overall level of inequality lower. Clearly, during the investigated period, social protection expenditures in Greece have increased their relative importance in supporting the level of disposable income.

In addition, the last part of the table presents the regional poverty rates, offering some indication of the spatial allocation of inequality. The official level of poverty has decreased in Attica, the South Aegean, Crete, Epirus, Thessaly and the Ionian Islands. In particular, the Ionian Islands and Crete appear to have a substantial decrease in the level of poverty. Moreover, significant parts of northern and central Greece show an opposite trend.

3.2.4. Conclusions

Between 2010 and 2019, overall income inequality in Greece decreased. However, as a general result, incomes have gravitated towards a lower level of median/average income, whereas the level of "distances" among the higher incomes has increased. Higher incomes, as opposed to lower ones, appear to have shown a greater concentration. The average differenc-

5. Each assumption and definition affects the manner in which inequality is measured. See Papatheodorou Ch. (2004), "Conceptual and methodological issues on the measurement of economic inequality: alternative interpretations and its consequences", in Petmezidou M. & Papatheodorou Ch. (eds.), *Poverty and Social Exclusion,* Athens, Exandas (in Greek).

TABLE 3.2.1 Income inequality indices, overall population, 2010, 2017 and 2019, Greece

	2010	Differences	2017	2019	Differences	Percentage change 2010-2019
Gini	33.5		-	31.1		
		2.1*			3.0*	
Gini (pensions excluded)	35.6		-	34.1		
		16.3*			20.5*	
Gini before all transfers (pensions and others)	51.9		-	54.6		
Mean log deviation (*L*)	19.7			17.9		-9.3%
Theil	19.2			18.0		-6.3%
Squared coefficient of variation (C^2)	25.4			28.1		10.5%
Atkinson ($A_{\varepsilon=0.5}$)	9.1			8.4		-8.1%
Atkinson ($A_{\varepsilon=2}$)	43.8			48.1		9.7%
Upper income 10%	4,762		-	4,080		-14.3%
		6,223**			4,697**	
Upper bound of the 5th income decile	10,985		-	8,777		-20.1%
		10,661**			7,628**	
Upper bound of the 9th income decile	21,646		-	16,405		-24.2%
Poverty threshold	6,591		-	5,266		-20.1%
Poverty rate	21.4%		-	17.7%		
		3.4*			5.9*	
Poverty rate after transfers (pensions excluded)	24.8%		-	23.6%		
		20.1*			26.0*	
Poverty rate before all transfers (pensions and others)	44.9%		-	49.6%		

TABLE 3.2.1 (continued)

	2010	Differences	2017	2019	Differences	Percentage change 2010-2019
Regional poverty rate						
Attica	-		15.4	12.5		
North Aegean	-		20.8	21.3		
South Aegean	-		17.5	15.7		
Crete	-		20.4	14.0		
Eastern Macedonia and Thrace	-		21.8	25.8		
Central Macedonia	-		18.9	21.7		
Western Macedonia	-		24.8	21.8		
Epirus	-		20.1	16.9		
Thessaly	-		21.6	18.3		
Ionian Sea	-		17.2	11.2		
Western Greece	-		24.5	27.4		
Sterea Ellada	-		19.1	19.9		
Peloponnese	-		19.0	20.6		

Source: Surveys of Income and Living Conditions, ELSTAT, author's calculations.

* In percentage points.
** In euros.

es among the higher incomes has decreased and the relative position of the lower 10% of the population has further deteriorated (see $A_{\varepsilon=2}$ in Table 3.2.1). As far as the level of differences among regions, the poverty rate is found to be varied. The role of social protection acquires a decisive role, as the impact of social transfers and pensions in lowering poverty becomes more important.