Research Article

Developments in Regional Inequality in Greece

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Greece experienced a sharp drop in economic activity due to the restrictive measures against the COVID pandemic in 2020. However, an immediate rebound followed, and the overall growth path was interrupted only temporarily. This growth path was translated into increases in disposable incomes, illustrated by changes in the entire income distribution, while income inequality fell. However, regional inequalities persist. This paper analyses the developments in income inequality in Greece from 2017 to 2022, focusing on the regional dimension of inequality and employing standard decomposition methods. It is found that there is significant income inequality within regions, probably explained by other socio-economic factors. At the same time, inequality between regions doubled, indicating diverging paths across regions of Greece.

1. Introduction

After a prolonged and deep recession, the Greek economy started to recover at a low pace. This growth trajectory was interrupted by the COVID pandemic and the consequent restrictive measures that led to a dramatic decline in economic activity. However, the rebound was immediate in the following years, and the Greek economy came back to a growth path as growth rates above the EU average followed.

The present paper focuses on income inequality developments in Greece since 2017, focusing mainly on the impact of the pandemic crisis and the regional dimension of inequality. As the pandemic crisis caused an increase in income inequality [1](see footnote: 1)[2][3], there is increasing interest in whether the inequality structure changed. One of the main aspects of inequality is that between regions, as regional economic differences are considered to be a potential threat to economic progress and social cohesion[4].

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The present analysis aims to find out whether there are different resilience levels between regions to different economic shocks. In the relevant literature, strong links between economic growth and the distribution of income have been found[5]. Further, another purpose of the present analysis is to explore the sources of income inequality by calculating inequality between and within regions during the last 5 years.

The paper is structured as follows: in Section 2, the data and methodology used are presented. Empirical results related to inequality at both the national and regional levels are presented in Section 3. Conclusions and policy recommendations are discussed in Section 4.

2. Data and methodology

The data used in the present analysis come from the Greek data set of the EU-SILC for the period 2018 – 2023. Although the timeframe of the analysis refers to 2017 – 2022 incomes, as participating households refer to the previous year's incomes in their answers. The EU-SILC is a harmonized cross – national longitudinal survey, carried out annually in all EU member states. It includes detailed information on income, employment status, health, education, housing, social transfers, and social participation, as well as socio-demographic characteristics. Since each household remains in the sample for up to four consecutive years, the EU-SILC is a rotational panel survey.

The present analysis uses the 'disposable monetary household income' as the main concept of resources. Household income is the sum of monetary incomes of all household members from all sources after the subtraction of direct taxes and social insurance contributions. As in the majority of the relevant literature[6][7], household income is standardized by the equivalence scale in order to take into account differences in the needs of the households. The equivalence scale depends on the size and composition of the household. In the present analysis, the equivalence scale used by Eurostat is employed, assigning a weight of 1.0 to the household head, 0.3 to each household member aged below 14, and 0.5 to remaining household members.

Aggregate inequality is measured using four indices as done by Andriopoulou et al.[6]. Firstly, we use the Gini index, which is the most commonly used inequality index. Then, we also use the Mean Log Deviation (MLD) and two members of the Atkinson family of inequality indices for inequality aversion parameters 0.25 and 0.75. All these indices satisfy the standard axioms of inequality measurement[2] but are more sensitive to different parts of the income distribution. The Gini index is relatively more

sensitive to changes in the middle of the income distribution, while ATK0.25 is more sensitive to changes close to the top of the distribution, and ATK0.75 and MLD are more sensitive to changes close to the bottom of the distribution. However, the MLD index has a very crucial property for our analysis, which is that this index is strictly additive decomposable. This property means that when the population is partitioned into non-overlapping and exhausting groups, it allows the identification of the contribution of each population group to aggregated inequality and the contribution of disparities between population groups to aggregate inequality [8][9][10]. Since the purpose of the present analysis is to study the regional dimension of inequality, the MLD is used for inequality decomposition.

Following Andriopoulou et al.[6], we applied "top and bottom coding" to our samples. Following the practice of the Luxembourg Income Study (LIS) database, we removed households with equivalized disposable incomes less than 1% and more than ten times the mean equivalized income of the corresponding distribution.

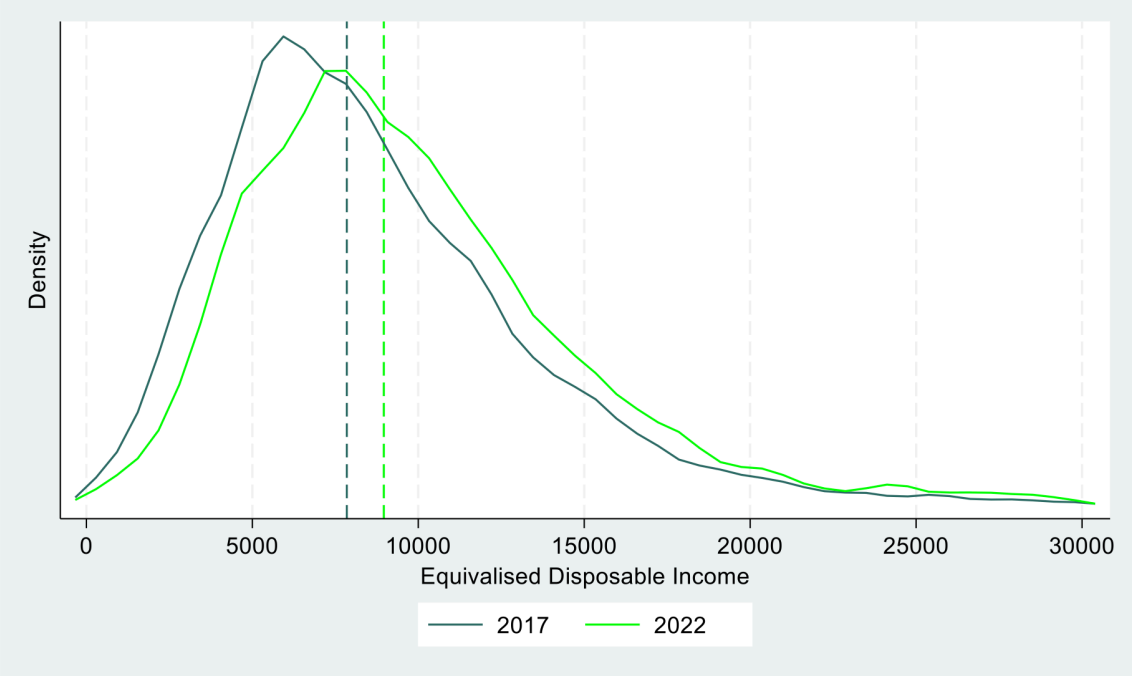
3. Empirical results

3.1. Changes in aggregate inequality

Graph 1 presents a comparison between equivalized disposable income distributions in 2017 and 2022. It should be noted that equivalized disposable income has been calculated keeping prices constant in 2017. This calculation is crucial since prices have increased more than 11% cumulatively in the 2017-2022 period, and any price effect should be eliminated. The graph shows a shift of real incomes between 2017 and 2022, indicating an improvement in living conditions. With a view to inequality, there is no clear result that can be obtained at first sight.

In Graph 2, the evolution of the main inequality indices is presented for the period under analysis. The indices' values have been standardized to 100 as 2017 is considered the base year. A significant reduction in all inequality indices in 2018 is followed by an increasing trend in 2019 and 2020. In 2020, the COVID pandemic outbreak affected inequality negatively, especially in the top part of the income distribution, as the increase of the ATK0.25 is the largest. On the contrary, there is an increase in the MLD and ATK0.75 indices, but it is relatively smaller, indicating that lower incomes were protected to some extent. A smaller increase due to the pandemic is estimated for the Gini index, showing that the impact was relatively smaller in the middle of the income distribution. After the pandemic and since

recovery started, inequality is following a downward trend, ending at lower levels compared to 2017 for all indices except for ATK0.25.



Graph 1. Income distribution and mean incomes 2017 – 2022.

Source: EU-SILC, 2018 – 2023 (incomes 2017 – 2022).

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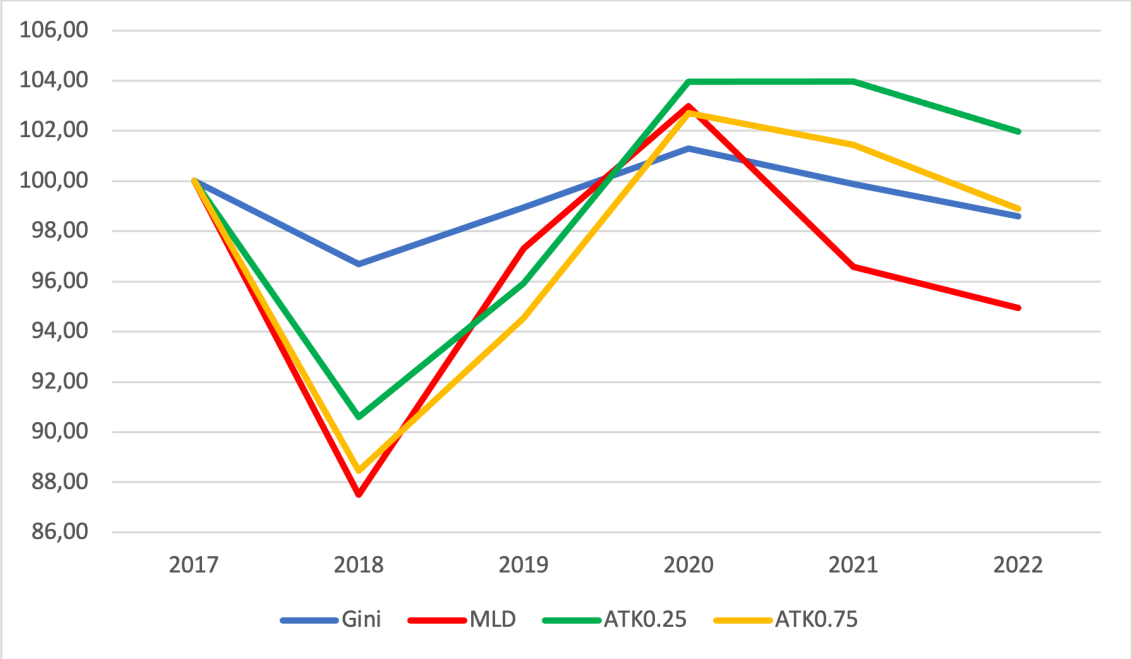

Graph 2. Inequality trends, 2017 – 2022 (2017=100).

Source: EU-SILC, 2018 – 2023 (incomes 2017 – 2022).

Cumulatively, the Gini index recorded a slight decrease of almost 1.4 percentage points, while ATK0.75 decreased by 1.1 percentage points and MLD decreased by more than 5 percentage points. On the other hand, the observed increase in ATK0.25 reveals that changes in higher incomes were relatively larger.

3.2. The regional structure of inequality

In this section, the structure of income inequality is analyzed, and the results are presented in Table 1. As mentioned before, the present analysis focuses on the regional dimension of income inequality. Hence, the population is grouped using the criterion of the main residence region. As in Andriopoulou et al.[6], where different decomposition criteria are used, the population share per region is reported in the first two columns (A and B), while columns C and D show the group mean incomes normalized by the national average of the corresponding year. In columns E and F, I report estimates of MLD (multiplied by 100), and the percentage change is reported in column G. Columns H and I contain information on the contribution of each region to aggregate inequality, while column J reports the percentage change of this contribution between 2017 and 2022.

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It has to be noted that the largest part of the population in Greece lives in the Attica region. Hence, inequality at the national level is mainly driven by inequality in this region. Another significant difference between Attica and the rest of the regions is that the mean disposable income in 2017 was higher than the national average only in this region. However, disposable income exceeded the national average in the South Aegean and Crete in 2022, indicating that these regions overperformed during the under-analysis period. On the contrary, there are regions that have deviated from the national average, such as the North Aegean, East Macedonia and Thrace, Central Macedonia, Thessaly, and Peloponnese.

Since the present analysis conducts a decomposition analysis of inequality based on the regional criterion, inequality is measured using the MLD index, which is strictly additive decomposable, as mentioned in a previous section. Inequality fell in all regions between 2017 and 2022, except for the Peloponnese, South Aegean, East Macedonia and Thrace, and Ionian Islands. The largest fall occurred in Western Macedonia (-31.2%), followed by Crete (-26.3%) and Thessaly (-23.3%). On the other hand, a sharp increase in inequality is observed in the Peloponnese, as the MLD index increased by 28.1% (from 14.6 to 18.6).

The contribution of each region to total inequality is presented in Columns H and I, considering population shares. For example, despite the decrease in inequality in the Attica region, the respective increase in the population share between 2017 and 2022 led to an increase in the contribution of this region to total inequality. According to the findings in Table 1, 39.5% of total inequality is attributed to inequality in the Attica region. Due to its high population share, Central Macedonia has the second largest contribution to total inequality.

	Population share		Mean income		Inequality (MLD)		Change (%)	Contribution (%)		Change
Population Group	**2017**	**2022**	**2017**	**2022**	**2017**	**2022**		**2017**	**2022**	
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Region										
Attica	36.0	37.2	1.13	1.16	18.8	17.4	-7.4	39.1	39.5	0.3
North Aegean	1.9	2.1	0.94	0.86	19.0	16.6	-12.7	2.1	2.1	0.0
South Aegean	3.4	3.1	0.99	1.13	16.4	16.9	3.1	3.2	3.2	0.0
Crete	5.7	5.8	0.91	1.03	14.9	11.0	-26.3	4.9	3.9	-1.0
Eastern Macedonia & Thrace	5.3	5.3	0.89	0.85	16.1	16.5	2.7	4.9	5.3	0.4
Central Macedonia	17.4	16.5	0.96	0.89	16.3	14.6	-10.5	16.3	14.7	-1.6
Western Macedonia	2.6	2.5	0.88	0.85	17.7	12.3	-31.2	2.7	1.9	-0.8
Epirus	3.0	2.9	0.94	0.93	15.4	12.5	-19.2	2.7	2.2	-0.5
Thessaly	6.7	6.9	0.94	0.88	16.6	12.8	-23.3	6.4	5.4	-1.0
Ionian Islands	1.9	1.9	0.96	0.97	15.1	15.6	3.9	1.6	1.8	0.1
Western Greece	6.1	6.4	0.85	0.82	14.8	13.6	-8.2	5.2	5.3	0.2
Sterea Ellada	4.7	4.1	0.89	0.91	12.8	12.6	-1.3	3.5	3.2	-0.3
Peloponnese	5.3	5.1	0.95	0.85	14.6	18.6	28.1	4.4	5.8	1.3
“Within groups”					16.8	15.5	-8.0	97.1	94.2	-3.0
“Between groups”					0.5	1.0	93.5	2.9	5.8	3.0
GREECE	**100.0**	**100.0**			**17.3**	**16.5**	**-5.1**			

Table 1. Structure of inequality by region, 2017 and 2022.

Source: *EU-SILC, Author’s calculations.*

The largest changes in contribution to total inequality are observed in Central Macedonia (-1.6), Crete (-1.0), and the Ionian Islands (-1.0). In Central Macedonia, both population shares, and inequality fell between 2017 and 2022, while in the other two regions, the fall in inequality drove the final result.

Finally, it is found that, in 2017, 97.1% of total inequality was explained by inequality within regions and only 2.9% by inequality between regions. As the largest part of income inequality comes from inequality within regions, there are other drivers (for example, socio-economic status or household composition) that determine inequality. However, a very interesting finding is that inequality between regions doubled between 2017 and 2022, indicating that regional discrepancies have increased during this period.

4. Conclusions

The present paper uses annual microdata from the EU Survey on Income and Living Conditions (EU-SILC) in order to analyse the developments in income inequality between 2017 and 2022. These developments are considered to be of extreme interest, as this period includes the outbreak of the COVID pandemic and its impact on economic activity and incomes. Using standard decomposition techniques employed in the relevant literature, this paper focuses on the regional dimension of inequality.

It is found that inequality within regions explains the largest part of total inequality, revealing that there are important factors that determine inequality regardless of the region of residence. Thus, a more in-depth analysis of socio-economic factors' impact on income inequality is needed. On the other hand, despite the low contribution of inequality between regions to total inequality, it is found that this contribution has doubled. Hence, inequalities related to disposable incomes have enlarged during the 2017–2022 period, implying diverged economic effects of the pandemic between regions.

From a policy perspective and in terms of interregional cohesion, the last finding is of high interest. Policymakers should keep in mind that balanced economic growth and social conditions can promote social cohesion and assure equal opportunities for all residents.

Notes

All views expressed in this paper are those of the author and do not necessarily represent the views of the Bank of Greece.

JEL Classifications: D31, I31, P25, R12.

Footnotes

[1] See https://www.statistics.gr/el/statistics/-/publication/SFA10/2021

[2] Symmetry, mean independence, population invariance and the principle transfers.

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Declarations

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