

Income Inequality in Central and Eastern European Countries

Orta ve Doğu Avrupa Ülkelerinde Gelir Eşitsizliği

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Abstract

Central and Eastern European (CEE) economies share a common past since they passed through a transition period in the 1990s. They experienced rapid economic growth in the post-transition period by facing structural changes in their economies and institutions. Even though achieving economic growth is desirable, it is not sufficient alone; rather, it is expected to be supported by more even income distribution. Accordingly, income inequality becomes a crucial topic in economic growth and development, particularly for CEE countries. This study examines income inequality in 12 CEE economies using a descriptive research method. The study reaches diversified outcomes by using various indicators on the topic, such as the poverty headcount ratio, the at-risk-of-poverty rate, the Gini coefficient, and income quintiles and deciles-related measures. The overall findings clearly show that income inequality is a critical concern in the region. Income inequality is the highest in Bulgaria, Romania, and Albania, and these economies are followed by Latvia and Lithuania, according to most of the indicators utilized. Forming an exceptional group; Czechia, Slovenia, and the Slovak Republic have more even income distribution not only compared to the other CEE economies but also the EU27. These economies are followed by Estonia and Hungary according to the outcomes reached by this study. The findings of this study can be used for policy designs to decrease the extent of income inequality in CEE economies.

Keywords: Income Inequality, Income Distribution, Income Distribution and Inequality, Central and Eastern Europe, CEE

Orta ve Doğu Avrupa Ülkelerinde Gelir Eşitsizliği

Özet

Orta ve Doğu Avrupa (ODA) ülkeleri ortak bir geçmişe sahip olarak 1990'lı yıllarda geçiş sürecinden geçmişlerdir. Geçiş sürecini takip eden dönemde, ekonomi ve kurumlarında önemli yapısal değişimler yaşamışlar ve ekonomileri hızlı bir biçimde büyüme göstermiştir. Her ne kadar ülkeler için iktisadi büyümenin sağlanması önem taşısa da bu tek başına yeterli olmamakta, büyümenin daha eşit bir gelir dağılımıyla desteklenmesi gerekmektedir. Dolayısıyla, iktisadi büyüme ve kalkınma açısından gelir eşitsizliği konusu, özellikle ODA ülkeleri bakımından önemli hale gelmektedir. Bu çalışma 12 ODA ülkesinde gelir eşitsizliğini betimsel araştırma yönteminden faydalanarak incelemektedir. Yoksulluk oranı, yoksulluk riski taşıma oranı, gini katsayısı ve nüfusun yüzdelik dilimlerine göre gelir dağılımı gibi konuyla ilgili çok sayıda istatistiksel göstergeden faydalandığı çalışmada ülke bazında çeşitli sonuçlara ulaşılmıştır. Çalışma bulguları bölgede gelir dağılımı eşitsizliğinin önemli bir sorun olduğunu açık bir şekilde göstermektedir. Bir çok göstergeye göre eşitsizliğin en yüksek olduğu ülkeler Bulgaristan, Romanya ve Arnavutluk olup bu ülkeleri Letonya ve Litvanya takip etmektedir. Çekya, Slovenya ve Slovak Cumhuriyeti ise bölgede gelir dağılımının hem diğer ODA ülkelerine hem de AB27'ye göre daha eşit olduğu istisnai bir ülke grubunu oluşturmakta ve bu ülkeleri Estonya ve Macaristan takip

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etmektedir. Bu çalışma ile ulařılan sonuçlar, ODA ülkelerindeki eřitsizlięin boyutunu azaltmayı hedefleyen politikaların tasarlanması süreçlerinde kullanılabilir.

Anahtar Kelimeler: Gelir Eřitsizlięi, Gelir Daęılımı, Gelir Daęılımı ve Eřitsizlik, Orta ve Doęu Avrupa, ODA

Atıf için (how to cite):

GÖRKEY, S., (2022). Income Inequality in Central and Eastern European Countries Fenerbahçe Üniversitesi Sosyal Bilimler Dergisi 2022;2(2), 303-316.

1. Introduction

Achieving economic growth and development is essential for every economy; however, solely reaching these targets is not sufficient. Higher income in an economy may sometimes alter income distribution in an uneven way that results in undesirable economic and social effects. In addition to this, income inequality is considered to be an obstacle in front of economic growth and development (Goebel et al., 2015, p.325). According to the OECD (2015) estimates, GDP in OECD economies could have been 5% higher without such rising levels of the uneven income distribution. Thus, higher levels of economic growth and development are expected to be targeted by avoiding income inequality as much as possible. Additionally, United Nations (UN) (2022) also emphasizes the importance of the issue by pointing out the importance of reducing inequalities in its sustainable development goals. Likewise, European Union (EU), prioritizes reducing inequalities in the member countries and it aims to decrease the extent of income inequality within the region (Nae, 2019, p.150).

Income inequality can be a more crucial concern in Central and Eastern European (CEE) countries and its unfavorable impacts can be more critical to the growth dynamics of these economies. The rationale behind such an argument lies in that most of these economies passed through a transition period. By sharing a common past, there had been outrageous reforms in the political and economic structures of CEE economies; thus, their economy shifted from central planning to market orientation. These countries experienced rapid economic growth during the post-transition period, which is known by the time interval starting from 1995 and ending with the global economic recession in 2008 (Dombi, 2013, p.452-453). During the centrally-planned economy, income distribution was more even in the CEE region compared to other economies and thus, income inequality was not considered to be an important issue at that time. However, the involvement of the private sector in the economy and institutional transformation resulted in rising income inequality and the issue has become an important concern starting from the post-transition period to date (Josifidis et al., 2018, p.523). Brzezinski (2018, p.222) also points out that the decentralization of wages was a crucial determinant of wage inequality that increased the extent of income inequality in the region during the transition period. The rationale for examining income inequality specifically for the CEE economies clearly shows the necessity of such an investigation, which is well documented in the existing literature. The studies that focus on income inequality in CEE economies address the importance of the issue in particular for the region and they find out that income inequality is a crucial concern for these economies (Brzezinski, 2018; Josifidis et al., 2018; Nae, 2019; Sukiassyan, 2007), with a few exceptions (Andor, 2020).

This study aims to contribute to the literature by examining income inequality in 12 CEE economies using various indicators and a recent dataset. Employing a descriptive research methodology, the study includes the poverty headcount ratio, at-risk-of-poverty rate, Gini coefficient, income quintiles and deciles, income quantile ratio, and income decile ratio to investigate income inequality. It aims to compare the relevant issue in the region to that in the EU27 as well as the most recent statistics to the pre-crisis levels depending on the availability of data. The findings of this study can be utilized to design policies and offer policy recommendations because understanding how income distribution evolved in these economies would be beneficial to understand economic growth and development dynamics for other transition economies as well.

The rest of the study is structured as follows: Section 2 provides a background and a literature review, section 3 presents the macroeconomic outlook, and section 4 examines income inequality in CEE economies. Finally, the fifth section presents concluding remarks.

2. Background and Literature Review

Income distribution and income inequality are widely studied in the literature by mostly utilizing relevant indicators. The studies focusing on the topic examine the poverty issue as well. Thus, this study first briefly explains the indicators used in its investigation.

Poverty rates are generally calculated using income or consumption-related measures and the most frequently used indicator on the matter is the poverty headcount ratio. Calculation of the poverty headcount ratio requires the determination of a threshold level either for income or consumption. After that, the proportion of the population below this threshold is computed to find the relevant ratio (UN, 2017, p.10, 86). Such thresholds are also called poverty lines and the World Bank announces three different poverty lines for low-income, lower-middle-income, and upper-middle-income countries. The most recent poverty lines that were announced by the Worldbank in September are \$2.15, \$3.65, and \$6.85 in 2017 PPP, respectively (Worldbank, 2022a). Despite its frequent usage, the headcount ratio has a disadvantage in that it only takes into account the number of individuals living below the poverty line without considering the depth of the poverty suffered by each individual (UN, 2017, p.6). Considering the income level of countries in the region, the risk of living in poverty may be an important issue rather than the poverty headcount ratio. Therefore, the study also includes the at-risk-of-poverty rate that offers a relative measure of poverty based on the Eurostat EU-SILC (European Union Statistics on Income and Living Conditions). This indicator is computed by the proportion of the population living below a threshold of at-risk-of-poverty. Such a threshold is mostly set at 60% of the national equivalised median income (Wolff, 2010, p.7). Using fixed threshold levels is criticized in that it does not take into account the changes in poverty because the threshold is set at a specific point in median income. Accordingly, if the income level in an economy increases by the same percentage, the threshold will also increase by the same percentage. Such an equal percentage change in a fixed threshold will show no change in the at-risk-of-poverty rate (Goebel et al., 2015, p.326).

There are numerous other poverty measures, such as the poverty gap, multidimensional poverty, and so on. All of these have certain advantages and disadvantages over the others. Because this study directly focuses on income inequality rather than poverty; it does not include detailed explanations of the comparison of various proxies for poverty. Instead, it aims to provide an overview of poverty in the CEE as the issue affects income inequality in the region. For this reason, poverty-related investigations in this study are limited by the poverty headcount ratio and at-risk-of-poverty rate.

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To measure income inequality, the study uses the Gini coefficient, income quintiles and deciles, income quintile ratio, and income decile ratio. The Gini coefficient is one of the most frequently used income inequality indicators and it is computed using the Lorenz curve that shows the distribution of cumulative income by cumulative population. The Lorenz curve compares the exact income distribution by the population to the line of equality and the Gini coefficient is computed by the proportion of the area between the line of equality and the exact curve that shows the income distribution of an economy to the total area below the line of equality (Yalkı, 2021, p.103). Income distribution indicators of quintiles and deciles show how the shares of income are allocated to the shares of the population in an economy. Income quintiles divide the population into five equal groups (20% proportions) according to income levels, while income deciles divide the population into ten equal groups (10%) according to income levels (Todaro and Smith, 2015, p.218, 219). The income quintile ratio equals the ratio of the income received by the highest quintile to the income received by the lowest quintile (Eurostat, 2022a) while the income decile ratio shows the same ratio for deciles (OECD, 2022). All of these income distribution indicators are crucial because they provide information about the fairness of income for economies.

The examination of income inequality attracts particular attention in the literature and these studies mainly concentrate on an economy, a group of economies, or a region. Investigating the issue, particularly in CEE economies, is crucial because these economies went through a transition period. They share a common past and experienced important changes moving from a centrally planned economy to a market-oriented economy. Those changes did require not only structural changes in their economy but also institutional changes that resulted in alterations in their income distribution (Josifidis et al., 2018, p.523, 524). Thus, the examination of income inequality is crucial, particularly for the region.

Most of the studies that investigate income distribution in CEE economies find that income inequality is a serious concern in the region (Aristei & Perugini, 2012; Brzezinski, 2018; Sukiassyan, 2007). By covering the period from 1988 to 2002, Sukiassyan (2007) empirically examines the impact of income inequality on economic growth in CEE economies and the former Soviet countries. The findings of this study show a significantly negative impact that is high in magnitude. Sukiassyan (2007, p.38) also does a detailed empirical literature review that includes an analysis of CEE economies. Brzezinski (2018, p.233) examines how inequality changed in 10 CEE economies during the Global Economic Crisis. For this purpose, he utilizes the Gini coefficient and they evidenced that income distribution became significantly more uneven in Bulgaria, Hungary, Estonia, and Slovenia, while it has significantly remained the same in Czechia, Poland, the Slovak Republic, Romania, and Lithuania. A decline in the Gini coefficient was only found in Latvia during the examined period. He also puts forward that the worsening of income inequality in the mentioned economies resulted primarily from full-time employment. Aristei and Perugini (2012) examine income inequality in 22 economies from CEE and former Soviet economies between 1989 to 2008 and they find out that the transition increased income inequality in the countries investigated. The magnitude of this impact on income inequality in economies is diversified according to many factors such as structural, economic, and social factors, as well as the timing of the reforms. Aristei and Perugini (2012, p.8) also emphasize that while the factors behind rising income inequality may be many, all are connected to the changes in the institutional structure.

Unlike the abovementioned studies and Inchauste and Karver (2018) that emphasize the rising importance of rising income inequality in the region between 1989 and 2015, Andor (2020) reaches the

opposite outcome. By examining income inequality in the CEE economies between 2005 and 2014, Andor (2020, p.50-51) argues that income inequality is not considered a crucial issue in the region.

In addition to the studies that directly focus on income inequality, the examination of poverty in the region is also crucial. Butkus et al. (2020) and Völlmecke et al. (2016) point out poverty as an important issue in CEE economies. Butkus et al. (2020, p.79-80) indicate that the transition in their economic system led to a rapid increase in poverty that in turn resulted in high masses of emigration from CEE economies. Völlmecke et al. (2016, p.296, 300) investigate income convergence at the regional level between 2003 and 2010 in Europe and find out that CEE regions with low national income are caught in a poverty trap.

The existing studies in the literature document that the examination of income distribution and income inequality is particularly crucial in CEE economies that mostly consist of transition economies. Accordingly, this study aims to contribute to the literature by examining the relevant topic in the region. The study uses various income inequality indicators for the region by employing a descriptive research method and comparing the most recent statistics with statistics that go back to the pre-crisis period when possible. It also compares income inequality in the CEE to the EU27 on availability in the dataset.

3. CEE Economies: A Macroeconomic Outlook

The study investigates the macroeconomic outlook of 12 CEE economies¹ to provide information about these economies before examining income inequality. To measure economic activity with population-controlled measures, it uses constant (2015 US dollars) GDP per capita rather than GDP. Economic growth is measured as the percentage change in GDP per capita compared to the previous year. The labor force participation rate is presented as percentages for the population aged over 15 years old and the unemployment rate presents the percentage of unemployed persons in the labor force. The inflation rate presents percentage changes in the consumer price index (CPI) and trade is measured as a percentage of GDP. All the statistics are compiled from the World Bank World Development Indicators (WDI) (Worldbank, 2022b) for 2021. Macroeconomic indicators have been volatile after the COVID-19 pandemic that took place in 2020. However, to present the most recent statistics, the relevant macroeconomic indicators are presented for 2021.

Table 1. Macroeconomic Outlook of CEE Economies, 2021

Country	GDP per capita	GDP per capita growth	Labor force part. rate (%)	Unemployment Rate (%)	Inflation (% Change in CPI)	Trade (% of GDP)
Albania	4831.87	9.55	58.53	11.82	2.04	74.52
Bulgaria	8293.57	4.70	55.63	5.42	3.30	124.99
Croatia	14888.33	14.66	52.04	8.68	2.55	103.76
Czechia	19608.99	3.29	59.68	2.89	3.84	142.11
Estonia	21421.15	8.37	63.38	6.33	4.65	160.79
Hungary	15486.63	7.54	59.18	4.12	5.11	161.91
Latvia	16406.23	5.44	60.06	7.60	3.28	130.22
Lithuania	18072.29	4.99	62.11	7.90	4.68	156.57
Poland	15549.67	6.06	57.01	3.37	5.06	117.62
Romania	11589.66	6.67	52.20	5.17	5.05	87.36
Slovak Rep.	17923.11	3.24	60.37	6.74	3.15	188.36
Slovenia	24703.63	7.88	57.94	4.42	1.92	161.74

¹ Albania, Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia.

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Notes: GDP per capita is in real terms (2015 USD), GDP per capita growth is the annual percentage change in GDP from the previous year, labor force participation rate and unemployment rate are based on ILO estimates, the inflation rate is the annual percentage change in Consumer Price Index (CPI), and trade is presented as a percentage of GDP.

Table 1 clearly shows that the top three countries with the highest GDP per capita are Slovenia, Estonia, and Czechia in 2021, respectively. Particularly, the relevant measure is extremely high in Slovenia compared to other economies. Albania has the lowest GDP per capita with 4831.87 US dollars which can be considered to be very low considering the other CEE economies. The closest economy to Albania is Bulgaria with 8293.57 US dollars that is followed by Romania with 11589.66 US dollars. Economic growth numbers that are represented by GDP per capita in **Table 1** show that the most remarkable output expansion was seen in Croatia, with 14.66% annual growth in 2021. The rest of the economies also experienced economic growth; however, the relevant measure was not as high as the one in Croatia. The other two economies that follow Croatia are Albania and Estonia, with 9.55% and 8.37% annual growth of GDP per capita, respectively. Labor force participation rates in CEE economies show that the relevant measure is not much high in the region by varying between 52.04% and 63.38% in 2021. The unemployment rate is the highest in Albania with a remarkably high value of 11.82%, whereas it is the lowest at 2.89% in Czechia. The other economies that faced low unemployment rates in the same year are Poland (3.37%), Hungary (4.12%), and Slovenia (4.42%) in the same year. The inflation rates in **Table 1** show that the consumer prices were the most stable in Slovenia (1.92%) followed by Albania (2.04%) compared to 2020 when the pandemic occurred. Trade measured as percentages of GDP indicates that the lowest values were seen in Albania and Romania while the highest was seen in the Slovak Republic, Hungary, Slovenia, and Estonia.

4. Income Inequality in CEE Economies

This study includes the poverty headcount ratio, at-risk poverty rate, the Gini coefficient, income quintiles, income deciles for the highest and the lowest 10%, income quintile ratio, and income decile ratio to examine income inequality in 12 CEE economies. The study aims to compare the most recent statistics to the earlier periods, particularly to the period before the 2008 Global Economic crisis when available. All the CEE economies are included in this study; however, the statistics for some economies are missing in some of the datasets utilized. In short, the study aims to cover all the CEE economies going back to the pre-crisis period when available in the datasets. Because CEE economies are members of the EU except for Albania, EU-27 statistics are also used to make comparisons upon availability.

4.1. Poverty

Poverty is examined using the poverty headcount ratio and at-risk poverty rate in CEE economies. **Table 2** presents the poverty headcount ratio measured as percentages of the population. This measure is computed according to the three different threshold levels of daily 6.85\$, 3.65\$, and 2.15\$ in 2017 PPP. As mentioned in the “2. Background and Literature Review” section of this study, 2.15\$ is a threshold that presents extreme poverty; thus, this threshold is more suitable for the analysis of low-income countries. The higher two thresholds of 3.65\$ and 6.85\$ are useful to examine the lower-middle income and higher-middle income countries, respectively (Worldbank, 2022a). Since Albania, Bulgaria, and Romania are classified as upper-income countries and the other CEE economies are listed as high-income countries according to the Worldbank (2022c), only a 6.85\$ threshold is a concern for Albania,

Bulgaria, and Romania among the CEE economies examined. However, to thoroughly examine the poverty issue for these economies and compare these three economies with other CEE economies, a full list of CEE economies and all the threshold values are provided in **Table 2**.

The statistics in **Table 2** clearly show that poverty can be regarded as a crucial issue for Albania, Bulgaria, and Romania when measured by the headcount ratio. Considering the 6.85\$ threshold that is more suitable for analysis for these three countries; 10.9% of individuals in Albania and Romania are considered to be living in poverty. 7.2% of the individuals in Bulgaria are also living on less than 6.85\$ a day. The poverty headcount ratios of 3.65\$ and 2.15\$ in **Table 2** make it obvious that poverty is a crucial concern for Romania. While other CEE economies do not face poverty as much, especially in lower thresholds; 4.7% of individuals in Romania are considered to be poor at the 3.65\$ threshold, and more importantly, 2.2% of those are living in extreme poverty. Thus, **Table 2** points out that poverty can be considered a critical problem for Romania, Albania, and Bulgaria while the issue is most critical in Romania.

Table 2. Poverty Headcount Ratio (% of population), 2017PPP

	Poverty headcount ratio at \$6.85 a day	Poverty headcount ratio at \$3.65 a day	Poverty headcount ratio at \$2.15 a day
Albania	10.9	0.8	0
Bulgaria	7.2	2.8	0.9
Croatia	2.4	0.6	0.3
Czechia	0.3	0	0
Estonia	1.4	0.9	0.6
Hungary	2.5	0.9	0.3
Latvia	2.6	0.8	0.2
Lithuania	1.6	0.7	0.5
Romania	10.9	4.7	2.2
Slovak Republic	2	0.5	0.1
Slovenia	0.1	0	0

Source: Worldbank, 2022b

Notes: Data for Poland is not available.

By relatively measuring poverty, the at-risk-of-poverty rate can provide a better picture for examining income distribution in CEE countries as the region consists of mostly high-income economies. **Table 3** presents the at-risk-of-poverty rate with a threshold of 60% median equivalised income (after social transfers) for 12 CEE economies and EU27 for selected years from 2005 to date. This study aims to go back to the pre-crisis period as much as possible. For this reason, the examination period starts in 2005. Poverty and income distribution statistics do not fluctuate substantially from one year to another. That is why the study involves a period with 5-year intervals. Because 2020 is the year the COVID-19 pandemic took place, the study also includes the year 2019 to present the situation just before the pandemic. 2021 is presented to show the most recent statistics right after the pandemic. **Table 3** shows that the countries that have higher at-risk-of-poverty rates compared to the EU27 are Albania, Bulgaria, Croatia, Estonia, Latvia, Lithuania, and Romania. While the relevant rate was higher compared to the EU27 in 2010 and 2015, it lowered below the EU27 afterward. Relative poverty measured as below %60 median income after social transfers first increases and then decreases in Bulgaria, Lithuania, and Romania. The relevant measure has been volatile without a clear trend in Czechia, Croatia, Hungary, and Slovenia while there is a steady decline in Poland during the year examined. **Table 3** clearly shows that relative poverty is considered to be a more crucial issue in CEE economies, compared to the

headcount ratio, particularly in Bulgaria, Estonia, Latvia, Lithuania, and Romania, exceeding 20% over many years.

Table 3. At-risk-of-poverty Rate (%)

	2005	2010	2015	2019	2020	2021
Albania	-	-	-	23	21.8	-
Bulgaria	-	20.7	22	22.6	23.8	22.1
Czechia	10.4	9	9.7	10.1	9.5	8.6
Croatia	-	20.6	20	18.3	18.3	19.2
Estonia	18.3	15.8	21.6	21.7	20.7	20.6
Hungary	13.5	12.3	14.9	12.3	12.3	12.7
Latvia	19.4	20.9	22.5	22.9	21.6	23.4
Lithuania	20.5	20.5	22.2	20.6	20.9	20
Poland	20.5	17.6	17.6	15.4	14.8	14.8
Romania	-	21.6	25.4	23.8	23.4	22.6
Slovak Republic	13.3	12	12.3	11.9	11.4	12.3
Slovenia	12.2	12.7	14.3	12	12.4	11.7
EU27	-	16.5	17.4	16.5	16.7	16.8

Source: Eurostat, 2022b

Notes: Threshold (Cut-off point) of 60% Median Equivalised Income After Social Transfers. 2021 data for Poland is provisional.

4.2. The Gini Coefficient

The Gini coefficient is frequently used for showing income distribution in economies. **Table 4** presents the relevant coefficients for 12 CEE economies starting from the post-crisis period to date. In addition to 2010 and 2015, **Table 4** does not only include 2020 but also 2019 and 2021 to provide the pre-pandemic and (the most recent) post-pandemic income distribution measures. It provides the EU27 statistics to make comparisons.

Table 4 shows that income inequality is higher in Albania, Bulgaria, Estonia, Latvia, Lithuania, and Romania compared to the EU27 during all the years examined in **Table 4**. While the relevant measure was higher in Croatia and Poland in 2010 than in the EU27, it declined below the EU27 afterward. Income distribution shows a decreasing trend in Croatia and Poland, while it exerts fluctuating decline in the Slovak Republic. Even though there has been a slight decline in income inequality in Lithuania and Romania after 2015, the relevant measures remain high when the most recent statistics are considered. The relevant measures show that income inequality has worsened in Hungary and Bulgaria from 2010 to 2020. Among the examined CEE economies, relatively lower income inequality has been evidenced in Czechia, Slovenia, and the Slovak Republic. **Table 4** clearly shows that income inequality is considered a critical issue in Bulgaria, Latvia, Lithuania, Romania, and Albania; while it has been the most critical in Bulgaria compared to the others. Finally, income inequality has been slightly fluctuating and thus, it can be considered stable during the period examined.

Table 4. The Gini Coefficient (scale between 0-100)

	2010	2015	2019	2020	2021
Albania	-	-	34.3	33.2	-
Bulgaria	33.2	37	40.8	40	39.7
Czechia	24.9	25	24	24.2	24.8

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Croatia	31.6	30.4	29.2	28.3	29.2
Estonia	31.3	34.8	30.5	30.5	30.6
Hungary	24.1	28.2	28	28	27.7
Latvia	35.9	35.4	35.2	34.5	35.7
Lithuania	37	37.9	35.4	35.1	35.4
Poland	31.1	30.6	28.5	27.2	26.8
Romania	33.5	37.4	34.8	33.8	34.3
Slovenia	23.8	24.5	23.9	23.5	23
Slovak Rep.	25.9	23.7	22.8	20.9	-
EU27	30.2	30.8	30.2	30	30.1

Source: Eurostat, 2022c

Notes: Gini coefficient is computed from the EU-SILC survey based on equivalised disposable income. 2021 data for Poland is provisional.

4.3. Income Quintiles and Deciles

A more detailed examination of income distribution and income inequality can be made using income quintiles because quintiles show the income received by each of the 20 percent of the population. A similar examination can be made for 10 percent of the population with deciles. **Table 5** presents income quintiles and deciles, **Figure 1** graphs the income quintile ratio (S80/S20) and **Table 6** shows the income decile ratio.

Table 5 presents income quintiles, as well as the lowest and the highest deciles for CEE economies for the most recent year in the dataset, 2019. Because the data for Poland is not available in the data source, **Table 5** is limited to 11 CEE economies. An examination of the five equal sizes of the population utilizing the income shares received from the total income generated in an economy, also known as quintiles, presents significant findings for income distribution in CEE economies. In general, income distribution is not considered equal among the countries examined. However, inequality is more visible in Bulgaria, Latvia, Lithuania, and Romania. In these four economies, the share of income received by the lowest 20% of the population is remarkably lower compared to other CEE countries, varying between 5.7% and 7.1%. The income received by the highest 20% population in these economies is also remarkably higher than the other countries covered in the study sample. Among these four economies, Bulgaria and Romania draw special attention by receiving only 5.7% of the total income generated in these economies. Thus, Bulgaria and Romania constitute the extremes in terms of the lowest quintile. In addition to this, another extreme in terms of the highest quintile is again faced by Bulgaria. 46.6% of the total income generated is held by the richest 20% of this economy. These numbers clearly show that Bulgaria can be regarded as the economy that experiences the highest level of unequal income distribution in the region in 2019. The values for the lowest and the highest deciles also confirm the comparably higher inequality for these economies. Accordingly, Bulgaria, Latvia, Lithuania, and Romania are the countries that face the highest inequality when measured by quintiles and deciles in the region. The mentioned four economies are followed by Albania, Croatia, Estonia, and Hungary in terms of inequality measured by quintiles, as well as by the highest and the lowest deciles. While the income proportion held by the lowest quintile varies between 8% and 8.3%, it changes from 37% to 39% for the highest quintile. By having very close values, these four economies present very similar income inequalities to each other. The remaining three countries, namely Czechia, the Slovak Republic, and Slovenia also exert inequalities in income distribution to a slightly lesser extent compared to other CEE

countries. All these explanations are also supported by the lowest and the highest deciles. A general interpretation of the statistics in **Table 5** makes it clear that income distribution is extremely far from being even and thus, income inequality is a very crucial issue in CEE economies when measured by quintiles and deciles in 2019.

Table 5. Income Quintiles and Deciles (%), 2019.

	Lowest 10%	Lowest 20%	Second 20%	Third 20%	Fourth 20%	Highest 20%	Highest 10%
Albania	3.4	8.3	12.7	16.9	23	39.2	23.8
Bulgaria	1.9	5.7	11	15.2	21.4	46.6	31.4
Croatia	3	8	13.7	18.1	23.3	37	22.2
Czechia	4.2	10.1	14.5	17.6	22.1	35.7	215
Estonia	3	8.1	12.9	16.9	23.2	38.9	23.3
Hungary	3.1	8	13.4	17.7	23.1	37.8	23.3
Latvia	2.6	7.1	12.2	16.4	22.3	42	26.6
Lithuania	2.6	7	12	16.1	22.1	42.8	27.5
Romania	1.7	5.7	12.1	17.7	24.2	40.4	24.5
Slovak Republic	3.6	9.5	15.4	19	23.2	32.8	18.8
Slovenia	4.2	10.1	14.7	18.2	22.4	34.6	20.7

Source: Worldbank, 2022b

Notes: Data for Poland is not available.

Figure 1 depicts how the income quintile ratio changes in 12 CEE economies from 2005 to 2021 annually. It also includes the EU27 starting from 2010 to date. Because the relevant ratio is equal to the division of the income held by the richest 20% to the poorest, a higher ratio refers to higher income inequality. The examination of **Figure 1** shows that according to the most recent years (2020 or 2021), 12 CEE economies can be classified into three different groups by their similarities in income quintile ratio. The first group consists of Czechia, Slovenia, and the Slovak Republic which have lower measures compared to the EU27. While the relevant ratio in Slovenia and Czechia has exerted slight fluctuations, it has shown a higher fluctuation first and then a declining trend in the Slovak Republic. According to the most recent statistics, the Slovak Republic has the lowest income quintile ratio in the region. In other words, the income inequality between the richest and poorest 20% of its population is the lowest considering all the CEE economies included in this study. The second group consists of economies that have an income quintile ratio close to the EU27 level at the end of the period examined. The economies in this group are Hungary, Poland, Croatia, and Estonia. Even though the relevant measure in Hungary was lower and closer to the first group in 2005 and between 2007 and 2011, it exerted an increasing trend and approached the second group afterward. On the other hand, by showing a decreasing trend throughout the entire period, the income quintile ratio in Poland has approached the first group by the end of the period examined. Even though this study classified Hungary and Poland in the second group using the income quintile ratio, they could have also been classified as between the first and second groups. While the relevant measure has been declining in Croatia, it has been highly volatile, reaching remarkably high levels between 2014 and 2016, and declining afterward in Estonia. According to the most recent statistics, the income quintile ratio in the EU27 is the closest to that in Estonia. Finally, the third group includes economies with extremely high-income quintile ratios varying between approximately 6 and 8. In other words, the population in the highest quintile receives between 6 to 8 times the income received by the lowest quintile between 2005 and 2021. The economies included in

this group are Albania, Lithuania, Latvia, Romania, and Bulgaria, most of which exerted higher income inequality measured by formerly used proxies in this study. **Figure 1** clearly shows that the countries in this group are characterized by higher fluctuations in their income quintile ratios during the period examined. One exception to this issue is seen as Albania. Because the data is very limited, a definite interpretation cannot be made for Albania. The income quintile ratio for Romania and Bulgaria attracts particular attention in this group. The measure in Romania exerted extreme volatility and had the highest ratio among all CEE economies in 2015; however it declined afterwards. The income quintile ratio in Bulgaria has exerted an increasing trend in most of the years and according to the most recent situation, it is the highest among all the CEE economies. By the year 2021, the highest income held by the richest 20% was 7.45 times that held by the lowest 20% in Bulgaria. The relevant ratio is 7.13 in Romania in the same year. Thus, among the five economies included in the third group, Bulgaria and Romania are the economies that experience the highest income inequality between the richest and poorest 20% of their population.

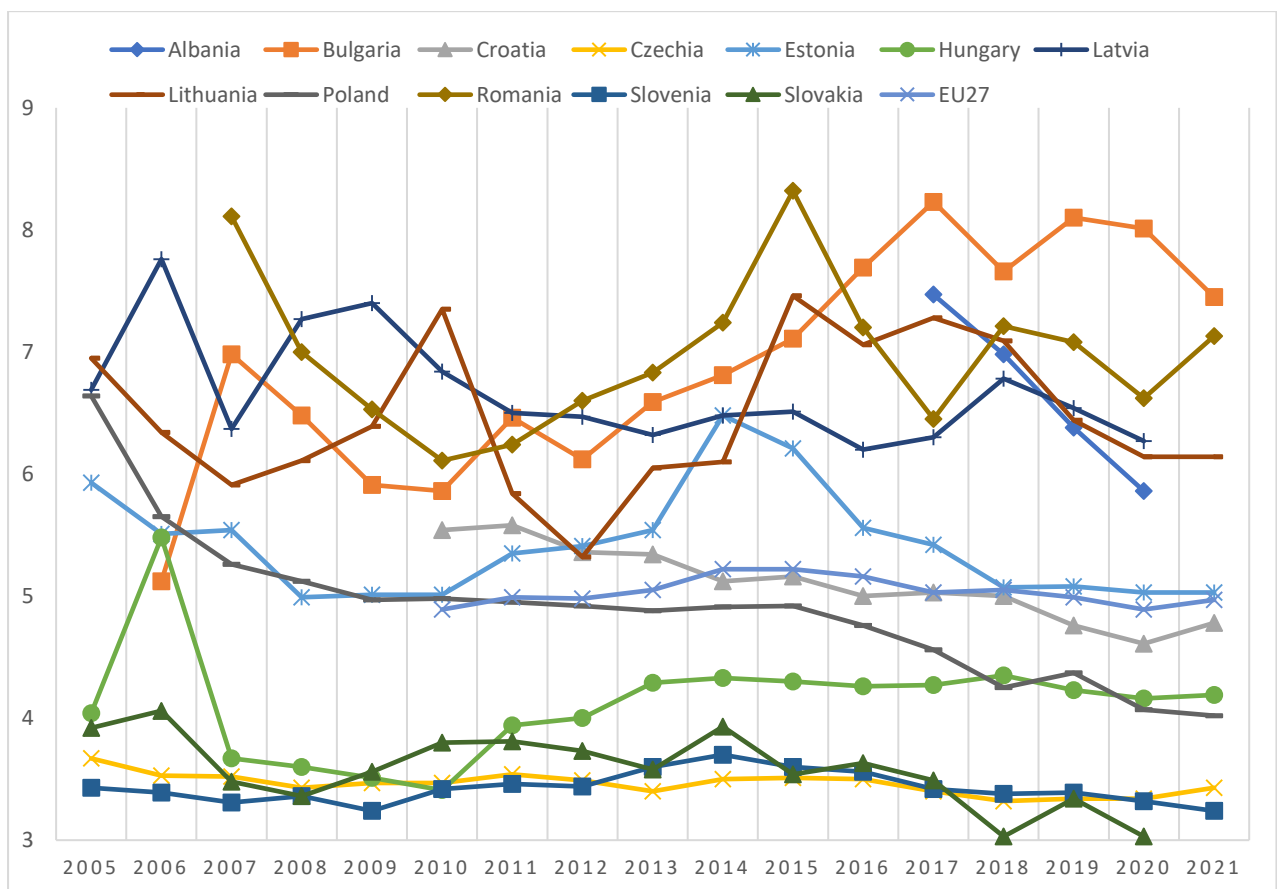


Figure 1. Income Quintile Ratio (S80/S20), 2005-2021, CEE Economies

Source: Eurostat, 2022a.

Notes: The data for the EU and Croatia is available starting from 2010, whereas it starts from 2007 for Romania. It is available between 2017 and 2020 in Albania. 2021 statistics are not available for Latvia and the Slovak Republic.

Table 6 presents the income decile ratio which is computed as the ratio of the income share received by the richest 10% to the poorest 10% of the population. It includes 10 CEE economies and statistics until 2019, according to the availability of the dataset. The years 2005, 2010, and 2015 are also presented to provide comparisons. **Table 6** provides similar outcomes to other quintile and decile-related indicators in **Table 5** and **Figure 1**. Accordingly, as shown in **Table 6**, the highest income

inequality has been evidenced in Bulgaria and Romania in terms of income decile ratio during all the years examined. In 2019, the highest income held by the top 10% population was 5.8 times that held by the lowest 10% in Bulgaria while the relevant measure was 5.7 times in Romania in the same year. Latvia and Lithuania follow them with an income decile ratio of 5. Meaning that the income received by the richest 10% population in Latvia and Lithuania is 5 times that received by the 10% population with the lowest income. **Table 6** also shows that income among the highest and the lowest decile has been more equally distributed in Czechia, Slovenia, and the Slovak Republic, as evidenced by the quintile and decile-related proxies examined earlier.

Table 6. P90/P10 Income (Disposable) Decile Ratio

	2005	2010	2015	2019
Bulgaria	5.6*	4.8	5.8	5.8
Czechia	3.1	3.1	3.1	3.1
Estonia	-	-	4.9	4.4
Hungary	3.1*	3.3	3.4	3.3
Latvia	5.8	5.1	5.1	5
Lithuania	5.2	4.7	5.6	5
Poland	4.5	3.9	4	-
Romania	6.4*	5.4	5.9	5.7
Slovak Republic	3.2	3.3	3.1	2.9
Slovenia	3	3.2	3.2	3

Source: OECD, 2022

* 2006 for Hungary, Bulgaria, and Romania

5. Concluding Remarks

This study examines income distribution and income inequality in 12 CEE economies by including various indicators and employing a descriptive research method. The indicators used in this study are the poverty headcount ratio, at-risk-of-poverty rate, the Gini coefficient, income quintiles and deciles, income quintile ratio, and income decile ratio. The research includes the most recent statistics to present the current situation in terms of income inequality and goes back to the pre-crisis period in the time dimension to make comparisons.

The findings from the indicators offer diversified outcomes according to economies and time; however, the overall outcomes reached by this research show that income distribution is considered far from being even for most of the CEE economies, with a few exceptions. The highest income inequality is seen in Bulgaria, Romania, and Albania, which are then followed by Latvia and Lithuania, according to most of the indicators included in this study. The income quintile ratio shows important implications for this issue. The highest income received by the richest 20% of the population was 7.45 times that received by the poorest 20% of the population in Bulgaria while the relevant ratio was 7.13 in Romania in 2021. These statistics present - only some part of – the extent of income inequality in these economies. As demonstrated in nearly all of the indicators included in this study, among the 12 CEE economies, Czechia, Slovenia, and the Slovak Republic have relatively higher income equality. These three economies frequently have more even income distribution compared to the EU27; thus, they constitute the exceptions in the region in terms of income distribution. Another two economies with relatively better income distribution indicators are Estonia and Hungary among the CEE economies.

The findings of this study can be used for designing policies and policy tools that aim to decrease income inequality in the region, particularly in Bulgaria, Romania, and Albania. Because most of the CEE economies share a common past, the experiences faced by the exceptional economies can be used for future implications for the economies that suffer from income inequality to a larger extent.

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