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THE ROLE OF INCOME DISTRIBUTION IN THE GROWTH-POVERTY NEXUS: EVIDENCE FROM CESEE COUNTRIES, WITH PARTICULAR REFERENCE TO THE MACEDONIAN ECONOMY

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***Abstract**: The paper explores the income distribution as a channel of transmission of the effects of economic growth on poverty reduction. For that purpose, we analyse data for the CESEE countries with a focus on the Macedonian economy. Since the 1990s, in the transition process to market economies, inequalities within countries in the CESEE region have risen the most. The income distribution achieved in the last decade is not sufficient to neutralise the high inequality created after 1990. The Macedonian economy shows improved income distribution in the last decade as well, which influences the level of poverty. Still, income inequality and the relative poverty rate are among the highest in the CESEE region. The study sheds light on the effects of the predistributive and redistributive factors on the level of inequality and poverty. We consider the extent to which different parts of the income distribution are affected by the process of average income growth. The main conclusion from the empirical analysis for the CESEE countries is that the sign of the growth rate of the average income of the population, in most cases, is an important predictor of the income growth rate of the quintile groups. Correlation results show that the sign of the growth rates of the average income of the population is the most important determinant for the sign of the growth rates of the average income of the quintile group for the quintiles nearest to the average income of the population.*

***Keywords:** growth; income; distribution; inequality; poverty.*

***JEL classification:** I32, O40, O10, N10.*

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INTRODUCTION

The paper addresses the issue of the transformation of economic growth to poverty alleviation in the CESEE countries[1] with emphasis on the role of changes in the income distribution that it induces. As a direct consequence of this functional connection, changes in poverty over time, among others, is determined by the changes in these two factors. The average economic growth is not a reflection of how growth is distributed among households with different characteristics. We analyse the distributive characteristics of economic growth and determine whether the benefit of economic growth is distributed equally through the whole distribution, or the growth has an asymmetric influence on poverty. We will shed some light on the tax system, taking into consideration government transfers, as the most important instruments to correct inequality through income redistribution. In the analyzis how the growth may have contributed to poverty reduction, it is important to understand the role of income distribution in the growth-poverty nexus. Higher economic growth can increase poverty when inequality is increased so much that the positive impacts from the growth are neutralised by the negative influences of the increased inequality. If inequality is increasing in parallel with GDP per capita, economic growth can lead to higher poverty (Stiglitz, 2016).

LITERATURE OVERVIEW

Recently disseminated case studies pointed out that the relationship of the income distributions and economic growth is at "once strong and complex". The growth-poverty relation is not simple and the corresponding elasticity is not constant across countries. Dollar and Kraay (2001)) in their article "Growth is good for the poor" concluded that, generally, poor population has benefited from growth as much as everyone else, but that does not mean that growth is the single factor which can help the poor population to escape from poverty. The results of the used time-series data (Muklok, 2012) showed that economic growth is an important, but not a sufficient factor for poverty reduction. Certainly, despite economic growth, an appropriate interaction between growth and distribution is essential for poverty reduction (Bourguignon 2003). Lustig et al. (2002) argued that "in sum, economic growth is a crucial factor in poverty reduction, but the level of inequality affects its impact on poverty".

Fosu (2011) presented evidence with findings that there is a significant discrepancy in the countries' abilities to channelise economic growth to poverty reduction based on different inequality profiles. Poverty rate alleviation is a result not only of economic growth, as a key factor, but it is also a reflection of growth elasticity of poverty reduction concomitant with high inequality (Ferreira, 2010).

Other modern economists (Ravallion, 2005, Bourguignon, 2003, Adams, 2004) concluded that a higher level of inequality in society neutralises the extent of the ef-

[1] Countries from the region of Central, Eastern and Southeastern Europe. The CESEE countries have several common characteristics. First, CESEE countries are small and open economies with strong ties with EU economies. Second, part of the countries are already members of the EU, and part are candidates or potential candidates for EU membership. Third, the transition process to market economies in the 1990s is also a characteristic they have in common. For the purpose of the paper, the CESEE region is composed of the following countries: Poland, Czech Republic, Slovakia, Hungary, Estonia, Latvia, Lithuania, Romania, Slovenia, Bulgaria, Croatia, Serbia, Montenegro, North Macedonia and in some cases Albania.

fects of growth on the level of poverty. Inequality can be harmful to the poor, but if the inequality reduction policies lead to additional distortions in the economy, the results of those policies can have ambiguous effects on economic growth and reduction of poverty (Ravallion, Inequality is Bad for the Poor, 2005). Thorbecke (2013) in his cross-country analysis, indicates that low growth rates and high inequality have been the main barrier for decreasing poverty. Meier and Stiglitz (2001) discussed the inclusion policies that will influence employment opportunities and decreasing disparities in incomes which will influence in creating a higher quality of life for the people who belong in the groups with the lowest income.

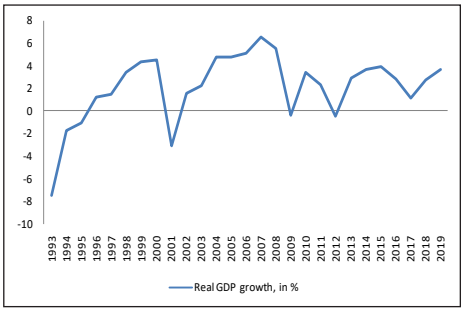
The pace of poverty reduction in a given country and at a given point of time will depend on the rate of average growth, the initial level of inequality and change in the distribution of income (Bourguignon F. , 2004) . This issue links the phenomena of economic growth, inequality and poverty in a so-called "triangle of poverty-growth-inequality". The focus is on the link between growth of the average income on the one hand, and changes in poverty on the other hand. This relationship is mediated by the level of inequality in distribution at the beginning of the observed growth period and by the change in the level of inequality over the same period. Particularly, the fastest poverty reduction will be observed in countries with the highest average income growth and in countries where income growth is accompanied by decreasing inequality (Bourguignon F. , 2003). There are empirical findings that show that when initial inequality is higher than growth, ceteris paribus, it has less influence on reducing poverty, i.e. the absolute value of poverty elasticity in terms of average income is lower (Ravallion, 2005, Bourguignon, 2003, Ferreira, 2010). Many studies demonstrate that a high level of initial inequality is harmful to the inclusive growth of the economy and consequently for reduction of poverty, especially in countries with very high-income inequality (Deininger and Squire, 1998; Ravallion and Chen, 2001) Additionally, other studies show that countries with lower initial inequality seem to have better preconditions for higher growth. There consequently is a growth effect to lower inequality where the economies are faced with a triple effect of inequality reduction, i.e. it reduces poverty immediately, it increases the poverty elasticity of growth, and it appears to increase economic growth (Klasen, 2005). Despite the fact that various analyses suggest that different levels of inequality between countries have implications on growth, they do not necessarily imply (re)distribution effects, seen as changes in inequality within a country which will necessarily have growth effect. Some findings concluded that redistribution has a negative influence on growth in the short term (Klasen, 2005). Many years back, Kuznets (1955) through the inverted U-curve elaborated that with achieved economic growth, in the first phase, the degree of inequality would increase and, then, in the next phase, the inequality will decrease. Specifically, in the primaeval stage of development, income inequality will increase, until the critical point is reached when income distribution is more equitable and results in significant reduction in the poverty rate.

THE ROLE OF INCOME DISTRIBUTION ON THE POVERTY OBSERVED THROUGH THE (P)REDISTRIBUTION MEASURES

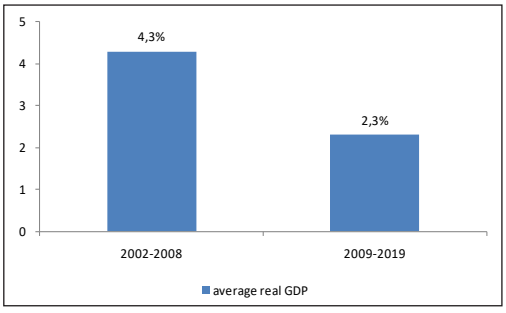
In the first years after the country's independence in 1991, the Macedonian economy was unable to achieve stable economic growth. The reason for the deep slump of GDP was the negative effects of the process of social transition and ownership

transformation as well as losses of the former markets. This period was followed by a gradual recovery of the economy, leading to a period in 2000 when a high level of economic growth was achieved (4.5 per cent). Already the next year, the growth melted down (-3.1%) as a consequence of the inter-ethnic tensions in the country. The average economic growth of 4.3 per cent in the period 2002-2008, years without domestic or external shocks, is significantly higher in comparison with the period 2009-2019 when the economy was under the influence of two external shocks in 2009 and 2012 and prolonged political uncertainty in 2017. In the period from 1993 to 2019, the economy grows at an average annual rate of 2.1 per cent.

Chart 1. Real GDP growth



Real GDP growth, Macedonian economy

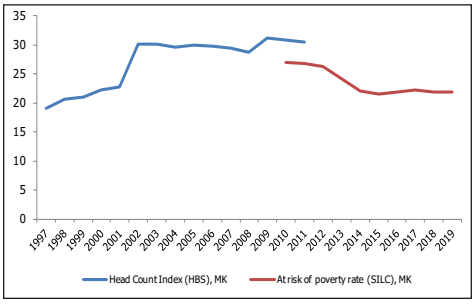


Average real GDp growth, Macedonian economy

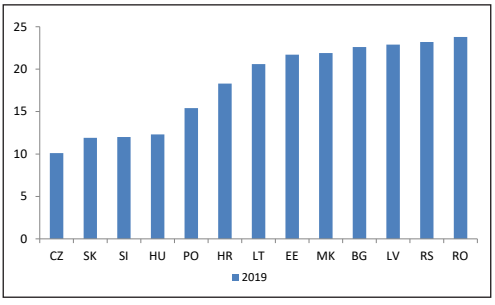
Source: National Bank of the Republic of North Macedonia

The Macedonian economy is faced with a high level of poverty. Estimated relative poverty rates in the Macedonian economy are among the highest in the region of Central, Eastern and Southeastern Europe (CESEE region) over a long time period. In 2019, a higher at-risk-of-poverty rate was registered only in Serbia and three EU countries – Bulgaria, Romania and Latvia.

Chart 2. Poverty indicators



Poverty rate, Macedonian economy



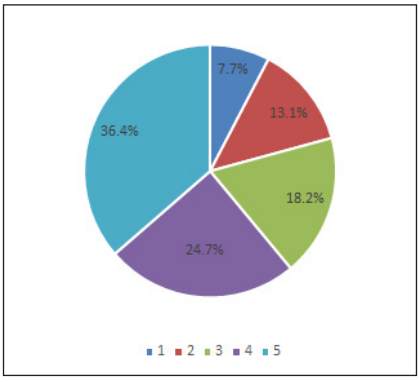
Poverty rate in CESEE countries

Source: State Statistical Office of the Republic of North Macedonia, Eurostat

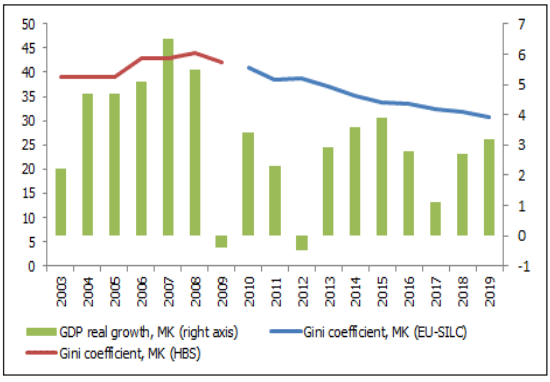
Income inequality is driven by different economic factors such as the level of unemployment, inactivity and informal employment, different (re)distributive factors, etc. Of the total national equivalised income in the Macedonian economy (2019), 61 per cent is concentrated in the fourth and fifth quintiles (25 per cent and 36 per cent, respectively). In contrast to these figures, 21 per cent of the national equivalised income is concentrated in the bottom 40 per cent of the population (8 per cent and 13 per cent, respectively). Despite the relatively positive income distribution in the last years, the share of people having income greater than 150 per cent of the median income is still high. In 2018, 21 per cent of the population had income greater than 150 per cent of the median income. Around 28 per cent of the national income is held by 10 per cent of the population. (World Inequality Database, 2000). At the same time, 6 per cent of the pre-tax national income is held by 1 per cent of the population.

The highest level of income inequality in the Macedonian economy, observed through the Gini coefficient, was registered in 2008, at 44 per cent[2], and after reaching the critical point in 2008, the Gini coefficient is continuously decreasing, achieving more equitable income distribution in parallel with income per capita increasing . In the period from 2003 to 2009, economic growth led to a rise in inequality after a long-term reduction in inequality was registered. In parallel with more equitable income distribution (analysed by the Gini coefficient), a decline in the poverty rate was registered. These descriptive statistics substantiate the validity of the Kuznets hypothesis in the Macedonian economy.

Chart 3. Equivalised disposable income by quintiles and Gini coefficient



Share of equivalised disposable income by quintiles, Macedonian economy, 2019



Gini coefficient of equivalised disposable income, Macedonian economy

Source: State Statistical Office of the Republic of North Macedonia

[2] In that period, the Gini coefficient was estimated through the Household Budget Survey, while the EU-SILC survey was introduced in 2010. It should be noted that HBS and EU-SILC data are not fully comparable. HBS is a consumption-based survey, while EU-SILC is income-based survey. Income sources are better captured in EU-SILC. However, the data from both sources can be used to follow the trend.

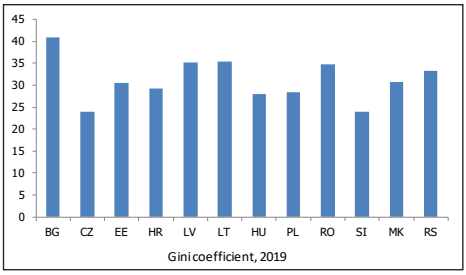
Despite the decrease registered in the last years, the level of inequality is still high. A comparison of the Gini coefficient for the Macedonian economy with other countries from the CESEE region shows more equal results than the comparison of poverty. However, with a Gini coefficient of 30.7 per cent in 2019, the Macedonian economy accomplishes more equal income distribution than six CESEE countries: Bulgaria, Latvia, Lithuania, Romania, Serbia and Montenegro.

For reducing high-income inequality, and thus poverty, countries implemented the policy of adequate social benefits. In the Macedonian economy, social transfers influenced a more appropriate income distribution, decreasing the level of poverty at the bottom of the distribution. Despite the low share of social transfers in the total disposable household income (by 3.9 per cent), transfers are an important source of income at the bottom of the distribution, with a share of 15.8 per cent in the first quintile group and 6.9 per cent in the second quintile group (2019). They reduced income inequality on average by 2.5 pp (from 2012 to 2019). The impact of social transfers on the at-risk-of-poverty rate is slightly stronger, decreasing the poverty rate on average by 3.3 pp (from 2010 to 2019). Social transfers are complementary income of the households at the bottom of the distribution. As a measure with a distributive effect, social transfers are an efficient measure for reducing poverty. The high efficiency of this distributive channel, among others, is due to the low level of income at the bottom of the distribution.

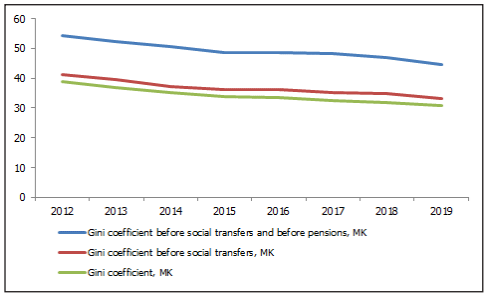
Another available policy instrument for direct transfer of funds to households is through elderly persons. Transfers in the form of pensions are an efficient instrument influencing not only on pensioners, but on the total poverty level. Pensions are the second most important source of income participating with 20.8 per cent in total average household income (2019) and the same can be observed as a replacement income. Characteristic of pensions is the fact that they are an important source of income for all quintile groups. Pensions contributed significantly to income growth among all quintiles of the distribution. Besides the bottom 40 per cent of the distributions, pensions represent a significant share of household income even for the highest, fifth quintile group. Pensions influenced negatively on income inequality, decreasing the Gini coefficient on average by 12.6 pp (in the period from 2012 to 2019). The negative impact of pensions on the total at-risk-of-poverty rate is significant, decreasing the poverty rate on average by 14.9 pp in the analysed period (in the period from 2010 to 2019). The at-risk-of-poverty rate for retired persons is continuously decreasing on a yearly basis, reaching 7.7 per cent in 2019. Comparative analysis showed that Macedonia has one of the highest poverty rates among countries in the CESEE region. Contrary to this indicator, estimated at 7.9 per cent, the at-risk-of-poverty rate for retired persons (18 years and over) is at the lowest level in the CESEE region. This comparison confirms the importance of pension payments for the well-being of the elderly on average.

To reduce inequality, it is expected from the countries to promote inclusive growth with income focused on the bottom of the distribution. Specifically, the analysed descriptive statistics on the Macedonian economy show that in the last decade income growth was higher at the bottom of the distribution than the average income growth (according to the EU-SILC survey).

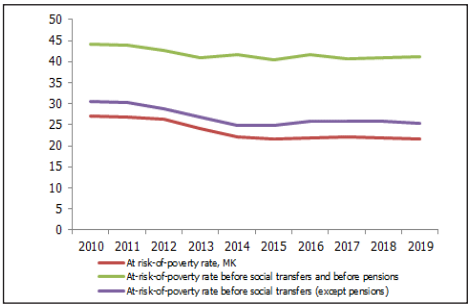
Chart 4. Inequality indicators and the impact of social transfers and pensions on inequality and poverty



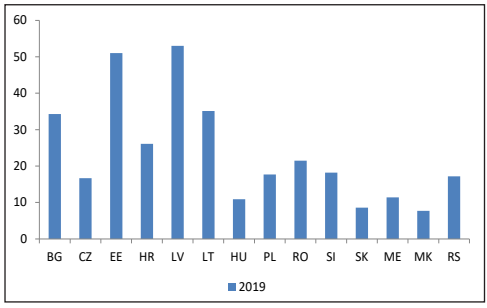
Gini coefficient CESEE countries



Gini coefficient, Macedonian economy



At risk-of-poverty rate, the Macedonian economy



Poverty rate for pensioners, CESEE countries

Source: State Statistical Office of the Republic of North Macedonia Eurostat

Data on the Macedonian economy suggest that during the 1980s, when the country was part of Yugoslavia, the income growth of the bottom 40 per cent was slightly lower than the average income growth (-0.8 per cent). After the declaration of independence, this indicator has significantly deteriorated, i.e. the income growth of the bottom 40 per cent of the population was 27 per cent lower than the average income growth. This is one of the indicators showing that, in that period, the inequality in the Macedonian economy was increased. In the period from 2000 to 2007, the income growth of the bottom 40 per cent was slightly higher than the average income growth. In the last decade, income growth of the bottom 40 per cent was 14 per cent higher than the average income growth, which resulted in lower inequality in that period. We already analysed that the income growth at the bottom of the distribution is higher than the average income growth according to the EU-SILC data. Taking into consideration the whole period from 1980 to 2017, the difference between the bottom 40 per cent income growth and the average income growth is negative. Similar results to the Macedonian economy are also observed in other countries from the CESEE region (Bulgaria, Romania, Hungary, Czech Republic, Estonia). All countries had worse distribution at the bottom in the period from 1990 to 2000 and better distribution in the last decade, when the income growth of the bottom of the distribution was higher than the average income growth.

Following this indicator, we do not follow potentially rising inequality at the top of the distribution. Because of this reason, we will analyse the indicator for the differ-

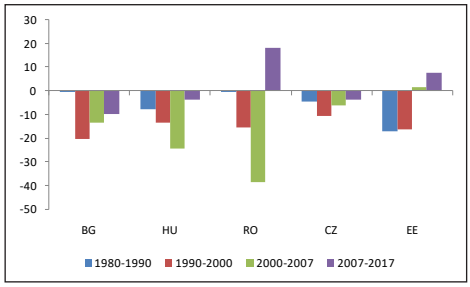
ence between the bottom 50 per cent income growth and the top 10 per cent income growth. According to this indicator, the Macedonian economy showed a positive result in the period from 1980 to 1990 and in the period from 2007 to 2017, i.e. in these two decades, the income growth pace of the bottom 50 per cent was larger in comparison with the top 10 per cent income growth. The highest inequality in the country was created in the period from 1990 to 2000, a period when the process of privatisation of state-owned capital was accompanied with political instability because of the conflict in the neighbouring countries and the economic embargo from Greece. In this period, the income growth of the bottom 50 per cent of the population was lower by 36 per cent than the income growth of the top 10 per cent of the population. For the whole period of the last four decades, the income growth of the bottom 50 per cent of the adults was lower by 35 per cent in comparison with the top 10 per cent of the adults. A negative result is registered in the other countries from the CESEE region, as well. During the 1990s, inequalities within the countries in the CESEE region have risen the most. The countries in the region faced with structural economic changes and political instability. The index generally became positive for some countries during the last decade (Montenegro, Croatia, Romania, Hungary, Estonia, etc). The reason for this can be the fact that the authorities put this issue high on the agenda and started to create more effective public policies to reduce the inequality, but also the membership in the European Union, higher flexibility of the labour force within the Union and the working remittances. Despite the better distribution in the last decade, the growth rate is not enough to neutralise the high inequality in the countries created after 1990.

In this part, we will focus on the extent to which income inequality, analysed through the top 10 per cent income share, and poverty are linked. In that respect, the mechanical relationship between the top 10 per cent income share and the level of poverty rate is not inherent for the theoretical explanation. Theoretically, taking into consideration the methodology for relative poverty, an income increase of the top 10 per cent of the population does not directly affect the at-risk-of-poverty rate since the income is accumulated to the median equivalised income as well.

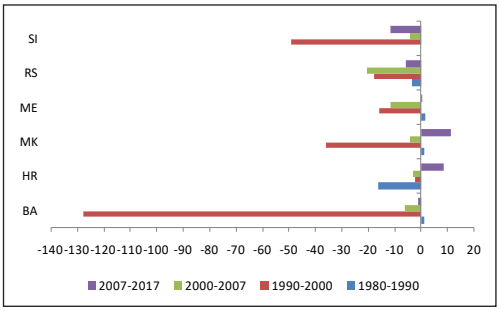
Comparing the data for the top 10 per cent income shares and at-risk-of-poverty rates in selected countries generally suggests a weakly positive relationship between these two indicators in most of the countries. A decrease in inequality in the Macedonian economy is accompanied by poverty reduction. A similar trend is seen in the Croatian economy. Specifically, when the top 10 per cent income share increased in 2015, poverty grew as well. This trend is also similar in Hungary and Romania. In Hungary, in the years when the top 10 per cent income share increased (2006, 2007), the at-risk-of-poverty rate rose as well. In Romania, the top 10 per cent income share went up in the period from 2012 to 2015, and in the same period the poverty rate increased.

Chart 5. Income growth at the bottom of the distribution

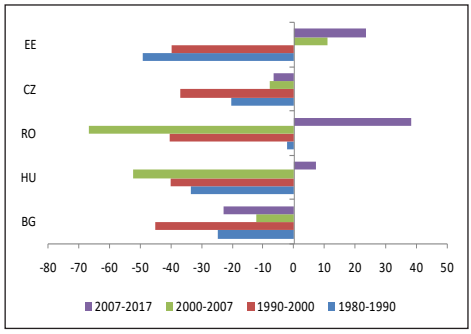
Differences between the bottom 40% growth and average growth in selected countries



Differences between the bottom 40% growth and average growth in selected countries



Differences between the bottom 50% growth and top 10% growth in selected countries



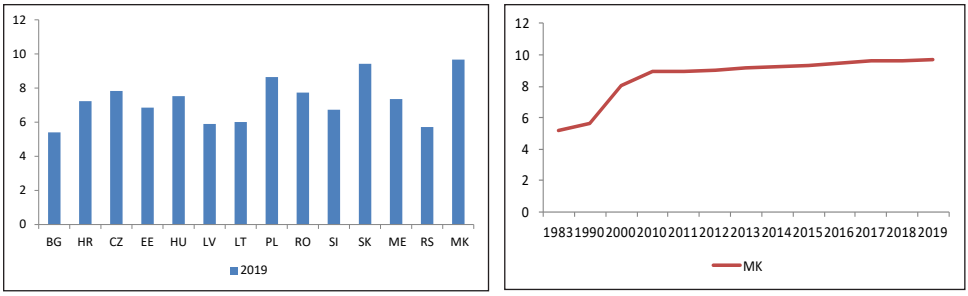
Differences between the bottom 50% growth and top 10% growth in selected countries

Source: World Inequality Database

An important aspect of the analysis is the post-tax income inequality in order to discover whether income inequality is a result of the pre-tax inequality or the differences in government redistribution (post-tax inequality). Taxes and government transfers are redistributed income if they reduce inequality, regardless of the degree to which this is accomplished over implicit or actual transfers from the top to the bottom of the distribution. Generally, there is a presumption in the theory that tax-transfer systems reduce inequalities by relocating resources to the population in low-income groups. With this instruments, countries have an effect on the level of income in the different quintiles, especially at the top of the distribution, and indirectly on the level of poverty. Nonetheless, tax policy can influence inequality without government transfers occurring (an example for that are progressive taxes which reduce inequality by itself even if revenues are not used for transfers). To analyse the influence of taxes on inequality, we will take into consideration the differences between the Gini coefficients, observed as

pre-tax national income[3] and post-tax national income[4] in selected countries. Net redistributive effects had an effect on decreasing inequality in the Macedonian economy by 9.7 p.p. (2019). Taxes and all transfers in the Macedonian economy are more redistributive than in other CESEE countries. Given the higher level of pre-tax inequality, the Macedonian economy remains more equal than the some other countries in the region, after all taxes and transfers are taken into account. The net effect of redistribution has been continuously increasing annually in the last decade (an exception is 2010 when we estimated an annual decrease). Aware of this, we conclude that the Macedonian economy is more equal than the economies of the other countries in the region as a result of the redistribution rather than predistribution measures. Of the countries in the CESEE region, only Slovenia has a similar net effect of redistribution. Bulgaria and Latvia are countries with the lowest effect of taxes and transfers in the last years. Since 1980, covering the period before and after introducing the market economy in the CESEE countries, all the countries achieved a better net effect of redistribution in the last years, except Estonia, Serbia and Slovakia. We should note that Slovenia and Estonia have achieved the biggest redistribution effect in 1980s, 1990s and 2000s, and despite the decrease in the last years, the net redistribution effect is still significant in comparison with the other CESEE countries.

Chart 6. Net redistributive effects, Macedonian economy and CESEE countries



Source: Author's calculation based on data published by the World Inequality Database

Characteristic for the Macedonian economy is the flat tax system, introduced in 2007, with a low tax rate of 12 per cent, reduced to 10 per cent in 2008 (refers to personal income tax rate and corporate income tax rate). Progressive taxation was adopted in 2019, still, in the same year, application of progressive tax rates was put on hold for the 36 months. Albania introduced a flat tax rate of 10 per cent in 2008. However, in 2014 Albania introduced two tax rates of 13 per cent and 23 per cent. Montenegro also introduced a flat tax rate of 9 per cent in 2007 (corporate income tax rate and personal income tax rate to be reduced to 9 per cent in 2010), but the tax system was changed in

[3] Pre-tax national income is the sum of all personal income flows, before taking into account the operation of the tax and transfer system, but after taking into account the operation of the pension system. (Blanchet, Chancel, & Gethin, 2019)

[4] Post-tax national income is equal to pre-tax income after subtracting all taxes and adding all forms of government transfers. (Blanchet, Chancel, & Gethin, 2019)

2013. Despite the flat tax system in the Macedonian economy, in 2018, the influence of taxes and government transfers on decreasing inequality was higher in comparison with Albania and Montenegro. Analyses of the countries from the CESEE region show that taxes and transfers in all other economies in the region have a lower effect on inequality than the effects in the Macedonian economy. The flat tax system introduced in 2007 did not have a substantially different effect on the level of post-tax inequality compared to the previous period (taking into consideration all forms of government transfers). In fact, the net effect of redistribution is slightly higher after introducing the flat tax system. In the period after introducing the flat tax system (twelve-year period, from 2007 to 2018), the net effect of redistribution is 9.1 p.p., while in the period before the changes of the tax policies (the twelve-year period from 1995 to 2006) the differences before pre-tax national income and post-tax national income is 8.31 p.p. The observation that net saving of the government is the highest in the CESEE region, and at the same time the impact of social transfers and pensions on poverty is significant, but still with the lowest influence in the region, leads to the conclusion that there is space for reduction of the informal economy (which will result with a higher collection of taxes), and/or that the government expenditures, other than social transfers and pensions, are also significant. Public policies could be predominantly focused on predistribution measures.

RESULTS FROM THE EMPIRICAL ANALYSIS

The presented conceptual frame is customised to the concept of "income quintile", i.e. the level of income in the quintile group. The whole income distribution of the population, y, is divided into K quintile groups marked with the index k ∈ {1, 2, …,K}. Furthermore, the total number of households or, more precisely, the total mass of households, is equal to one. For the quintile group k, the average quintile income can be presented with the equation:

$$\varphi_{k,K\,(y)\,=\,K} \int_{(k-1)/K}^{k/K} y\,(q)dq \qquad (1)$$

where q denotes quintile distribution of the income, q {0,1). The share of the total income of the income group k in the total income of the whole population is:

$$\pi_{\,k,K\,(y)\,=} \frac{\int_{(k-1)/K}^{k/K} y(g)dq}{\int_0^1 y\,(q)dq} \qquad (2)$$

Correspondingly, the average income of the income group k can be presented:

$$\varphi_{\,k,K}\,(y) = K * \pi_{\,k,K}\,(y) * \mu\,(y) \qquad (3)$$

Where $\mu(y) = \int_0^1 y(q)dq$ is the average income of the population. Expression (3) shows that the differences in the average income of the quintile group k between the two distributions arise as a result of the differences in the share of the specific quintile group in the total income of the population and the differences in the average income at the level of the whole population.

By logarithmising both sides of the equation (3.3), we obtained:

$$\text{In } \varphi_{k,K}(y) = d \text{ In } \pi_{k,K}(y) + d \text{ In } \mu(y) \quad (4)$$

Taking into account that K is constant:

$$D \text{ In } \varphi_{k,K}(y) = d \text{ In } \pi_{k,K}(y) + d \text{ In } \mu(y) \quad (5)$$

i.e.

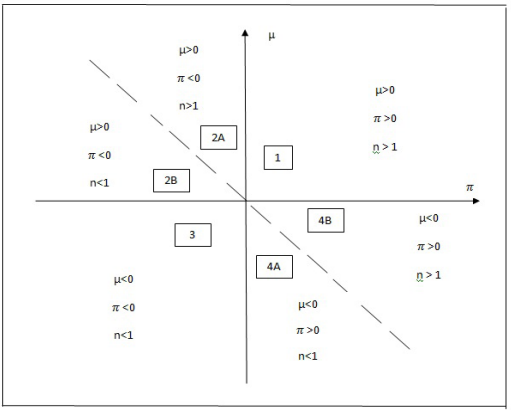
$$n_{k,K} = \frac{d\, In\, \varphi k,K(y)}{d\, In\, \mu(y)} = = \frac{d\, In\, \varphi k,K(y)}{d\, In\, \mu(y)} + 1 \quad (6)$$

The expression on the left side of the equation, $n_{k,K,}$ is the average income elasticity of the quintile group k, taking into account the average income of the population, since it is measured as percentage change of the average income of the quintile group k which occurs in parallel with the growth of the average income of 1 per cent. It should be noted that we analyse the total, not partial elasticity: elasticity is total because economic growth affects the average growth of the quintile group, directly and indirectly, through the influence on the share of the observed quintile group in the aggregate income. In other words, we assumed that the growth of the average income of the population changes the share of the quintile group in the aggregate income. The right side of the equation (3.5) shows the elasticity of the share of the total income of the quintile group k in the total income of the population, considering the average share of the population. The equation clearly shows that in the case when the share of the observed quintile group does not depend on the average income (therefore, if $\frac{d\, In\, \pi kK(y)}{d\, In\, \mu(y)} = 0$), the average income of the same quintile group grows by the same rates as the average income of the population. In other words, if the economic growth, observed through the growth of the average income of the population, does not affect the share of the specific quintile group in the aggregate income of the population, in relative terms, income in the quintile group, on average, will grow equally as the entire population. If there is a relationship between the share of the quintile group in the aggregate income and the average income (if $\frac{d\, In\, \pi kK(y)}{d\, In\, \mu(y)} \neq 0$), growth of the average income of the population will not transform "one for one" in the growth of the average income of the quintile group. When positive economic growth is followed by a distributive change which increases the share of the quintile group in the aggregate income ($\frac{d\, In\, \pi kK(y)}{d\, In\, \mu(y)} > 0$), the average income of the quintile group will grow with higher rates in comparison with the average income of the population. Conversely, if the influence of the positive growth on the share of the quintile group in the aggregate

income is negative ($\frac{d\ In\ \pi kK\ (y)}{d\ In\ \mu\ (y)} < 0$), the average income of the quintile group will grow with lower rates than the average income of the population. That way, distribution changes which follow the growth depending on whether they are to the benefit or detriment of the observed quantile group can strengthen or weaken the influence of the population average on the average of the quintile group. Dependence of the dynamics of the average income of a quintile group k on the dynamics of the share of the quintile group in the total income of the population and the dynamics of the average income of the population can be presented graphically (Figure 1). The horizontal axis shows the growth rate of the share of the quintile group in the aggregate income, and the vertical axis shows the growth rate of the population. A line that runs diagonally through the second and the fourth quadrant is the locus of the differential equation (4.6) d In πkK (Y) + d In μ (y) = 0, representing a combination of the growth rate d In πkK (Y) and d In μ (y) for which the average income of the quintile group remains unchanged, d In ϕk,K (y) = 0. For all combinations on the right side of the locus, the growth rate of the average income of the quintile group is positive: in the first quadrant μ and π are growing, consequently, ϕ is growing as well. In the areas 2A and 4B, μ and π are moving in the opposite directions; still, the growth of the first factor is more intensive than the decline of the second factor, which results in growth of the average income of the quintile group. At the same time, for all combinations on the left side of the locus, the average income of the quintile group is declining: in the third quadrant, μ and π are decreasing, and ϕ is decreasing as well. In the areas 2B and 4A, the changes of μ and π are with opposite sign, provided that the indicator which is declining, declines more intensively than the indicator which is growing.

In figure 1, it is graphically presented and described how the changes in the average income of the quintile group depend on the changes in the share of the specific quintile group in the aggregate income and changes in the average income of the population. In the same coordinate system, it can be shown for which combination the elasticity of the average income of the quintile group, given the average income of the population, is positive (growth/fall of the average income of the population increase/decrease the average income of the quintile group), and for which it is negative (growth/fall of the average income of the population decrease/increase the average income of the quintile group.). Both cases can be analysed when the average income of the quintile group is inelastic ($n_{k,K} < 1$), when it is unit elastic ($\ln_{k,K} l = 1$) and when it is elastic ($n_{k,K} l > 1$), taking into consideration the average income of the population.

Figure 1. Dependence of the dynamics of the average income of a quintile group on the dynamics of the share of the quintile group in the total income and dynamics of the average income of the population



Source: Author's ilustration

When the economic growth is positive (d ln μ > 0), i.e. in the first and the second quadrants, for the observed quintile groups, the most appropriate combination is in the first quadrant: the elasticity here is higher than 1, which means that the average income of the quintile group grows with higher rates than the growth rates of the average income of the population as a result of the positive influence of the growth, enhanced with positive distributive changes for the quintile group (increasing the share of the quintile group in the aggregate income). Moving anticlockwise, we come to the combination for which elasticity is equal to 1 (unit elasticity), all combinations in the positive part on the vertical axis. For that combination, the average income of the quintile group grows with the same rates as the population average because there are no distributional changes which will affect the observed quintile group (d ln = 0). For a given positive growth rate of the population average to be at the point where elasticity is unit, it is worse than being at a point where elasticity is higher than one. We come to the combination where elasticity is between one and zero, when average income grows with positive rates, but lower than the growth rates of the average income of the population, as a result of the lower share of the quintile group in the aggregate income, which partially nullifies the favourable influence of the positive growth rates of the average income of the population. Furthermore, even worse is the combination when the elasticity is equal to zero, on the diagonal bisecting the second quadrant, where the average income of the quintile group does not change when the average income of the population is growing, and the positive influence of the growth of average income is completely neutralised by distribution changes which do not have a positive effect on the share of the quintile group in the aggregate income. After this, we come to the combination for which elasticity is negative, where distribution changes for the quintile group are so negative that the positive influence of the population average is more than neutralised and the average income of the quintile group declines as a result: with the rates which are according to absolute terms lower than the growth rates of the population average, in the points where elasticity is lower than 0 and higher than -1; with rates which are equal to the absolute values as growth rates of the population average

in the points where elasticity is equal to -1; with growth rates which are according to absolute values higher than the growth rates of the population average in the points for which elasticity is lower than -1. With the same arguments, we can explain that when there is negative economic growth, the situation is the opposite. For the given negative growth rate of the average income of the population, from the perspective of the observed quintile group, the worst combination is in the third quadrant, where elasticity is higher than 1, and the best combination is the space bounded by the positive part of the horizontal axis and the part of the slope line -1/2 which passes through the fourth quadrant, for which elasticity is lower than -1.

Chart 7 shows an empirical combination of the growth rates of the share of the quintile group in the aggregate income and the growth rates of the average income of the population for the whole sample (125 periods for the CESEE countries[5]). We use data on mean equivalised net income and quintile income (top cut-off point[6]), expressed in purchasing power standard to eliminate the differences in price levels between countries.

For the four quintile groups (from the first to fourth quintile), the most combinations are located in the space above the slope diagonal -1 which passes through the firstand fourth quadrants (from 48 per cent to 64 per cent, depending of the quintile group). In other words, with positive growth, significant parts of the periods are those for which the income of the quintile groups grows at a faster pace in comparison with the mean equivalised net income. Depending on the quintile group, those are from 47 per cent to 61 per cent of the total number of periods. Of those 47-61 per cent, the biggest part (36 - 53 pp) are periods when the mean income of the population grows, and a small part (11-14 pp) when the income falls.

Negative growth is registered at around half of the total number of periods (between 36 per cent and 52 per cent). When negative growth is registered, the mean income of the population grows at a faster pace in comparison with the growth of the quintile group in around half of the cases (between 34 per cent and 48 percent). When mean income decreases, quintile income drops by 1.6 per cent to 4 per cent, depending on the quintile group.

From these facts, we can conclude that the sign of the growth rate of the average income of the population in most cases is an important predictor of the growth rate of the income of the quintile group.

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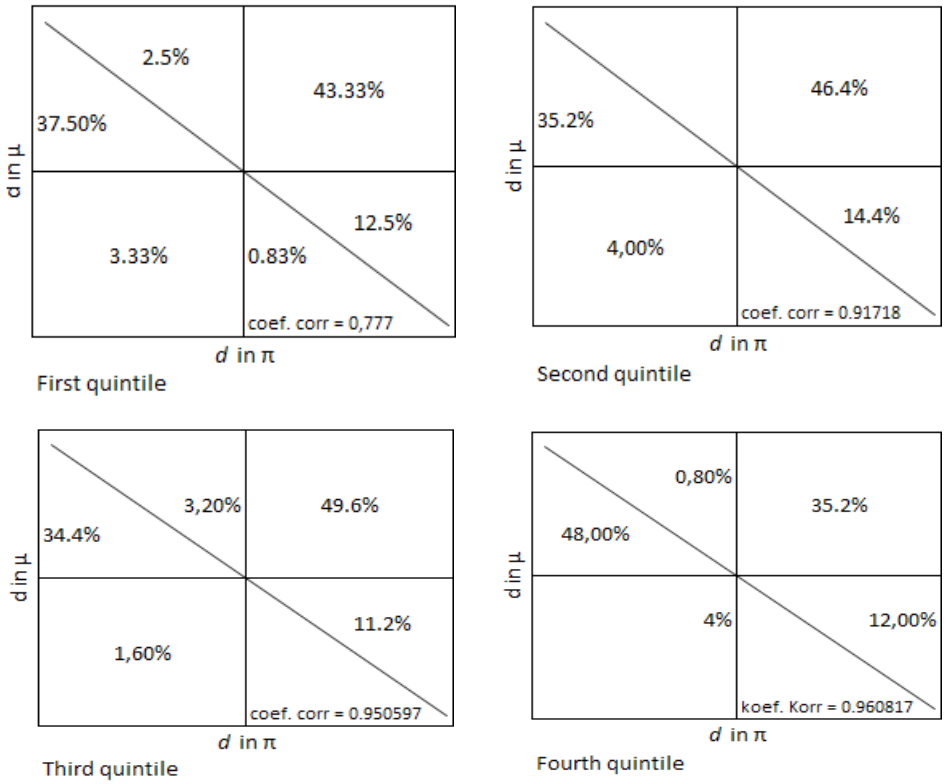
5 CESEE countries are covered, for the period 2011-2019.

6 Available indicator from Eurostat.

Chart 7. Income elasticity for the group of CESEE countries, by quintile and coefficient ofcorrelation



Source: Author's estimations

The correlation is strong for all quintile groups; however, as values of the coefficient of correlation are shown, it varies by quintiles: it is the weakest for the first quintile group (coefficient of correlation = 0.777) and the strongest for the fourth quintile group (coefficient of correlation = 0.9608). There are few periods for which the sign of the quintile growth rates is opposite from the sign of population growth rates. Generally, the sign of the growth rates of the average income of the population is an important determinant for the sign of the growth rates of the average income of the income group. That is the most pronounced in the third and fourth quintile groups, which is expected result since in these groups the income is the closest to the average income of the population.

CONCLUSION

From the beginning of the transition to a market economy, the Macedonian economy achieved moderate economic growth, with frequent cycles, accompanied by a high level of inequality and poverty. During the 1980s, the income growth of the bottom 40 per cent was slightly lower than the average income growth (-0.8 per cent). Af-

ter the country declared independence, this indicator has significantly deteriorated (-27 per cent). In the period from 2000 to 2007, the income growth of the bottom 40 per cent was slightly higher than the average income growth. In the last decade, income growth of the bottom 40 per cent was 14 per cent higher than the average income growth. The analysed descriptive statistics substantiate the validity of the Kuznets hypothesis in the Macedonian economy. Despite the relatively positive income distribution in the last years, the income disparity is still high. The analysis for the CESEE countries shows similar trends. All CESEE countries perform worse distribution on the bottom in the period from 1990 to 2000 and better distribution in the last decade. Nevertheless, the results achieved in the last decade are not sufficient to neutralise the high inequality in the countries created after 1990. The better income distribution in the CESEE countries is a result of the more effective public policies followed by the positive effects of EU membership and higher flexibility of the labour force. The flat tax system introduced in the Macedonian economy in 2007 did not have a significantly different effect on the level of post-tax inequality in comparison with the previous period. Macedonian economy achieves more equal income distribution as a result of the net effects of redistribution, taxes and all transfers are more redistributive than in other CESEE countries which leads to the conlusion that the public policies could be predominantly focused on predistribution measures. When positive growth is registered (between 48 per cent and 64 per cent, depending from the quintile group), for significant parts of the periods the income of the quintile groups grows at a faster pace in comparison with the mean equivalised net income. Conversely, with negative growth (in 36 per cent to 52 per cent of the periods), the mean income of the population grows at a faster pace. Correlation results show that in the third and fourth quintile groups the sign of the growth rates of the average income of the population is the most important determinant for the sign of the growth rates of the average income of the income group.

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