



Social Welfare: Bulgaria (2007 – 2021)

Rumen Brussarski

Department of Finance, University of National and World Economy, Sofia, Bulgaria

Info Articles

Abstract

History Article:
Submitted 27 May 2023
Revised 7 June 2023
Accepted 12 June 2023

Keywords:
economic growth, income
inequality, social welfare

JEL: O40, D30, D60

Economic welfare has been one of the greatest challenges facing humanity since the expulsion of Adam and Eve from Paradise. Resources are limited, but people's desires for consumption are not. Since 01.01.2007, Bulgaria has been a member of the European Union (EU) – a political and economic union of 27 countries with an area of 4 233 255 sq. km., a population of about 450 million people and over 15% of the world's gross domestic product. This article is devoted to economic growth, inequality in the distribution of income and the welfare of our society for the period 2007 – 2021.

In the research process, we work with three main indicators – real gross domestic product per capita, Gini coefficient and social welfare function of Sen. For the purposes of the comparative analysis, we use four benchmarks – the EU 27, the neighboring countries, the countries of the Visegrad Group and the three largest economies in the EU.

The study shows unsatisfactory rates of catch up economic development, a high degree of inequality in the distribution of income and the lowest level of social welfare within the EU for the entire period.

* Address Correspondence:
E-mail : rbrusarski@unwe.bg

INTRODUCTION

The welfare of modern society depends (mainly) on:

- the amount of goods created over time – the size of the cake; and
- the distribution of these goods among people – the distribution of pieces of the cake in society.

In this article, we examine the dynamics of social welfare in Bulgaria over a 15-year period (2007 – 2021), as follows:

- economic growth;
- income inequality;
- social welfare function.

For the purposes of the comparative analysis, we use four benchmarks:

- EU 27 (from 2020);
- neighboring countries (Romania, Greece, Serbia, North Macedonia and Turkey);
- the countries of the so-called Visegrad Group (Poland, Hungary, Czechia and Slovakia)¹;
- the three largest economies in the EU – Germany, France and the United Kingdom (until 2020).

ECONOMIC GROWTH

A key indicator of economic development in the modern world is *the real gross domestic product per capita*.

Figure 1 presents the dynamics of the real gross domestic product (GDP) per capita in the EU, Bulgaria and the other twelve studied countries for the period 2007 – 2021 in Purchasing power standards (PPS)².

Within the studied period, the real GDP per capita in Bulgaria shows a steady growth with few exceptions (in 2009 and 2013 there was a slight decline, and in 2020 – stagnation). In 2007 (the first year of our EU membership), real GDP per capita in our country was 10 000 PPS EU 27 (2020), and in 2021 – 18 600 PPS EU 27 (2020). That's real growth of 86 %, or just over 4.5 %, on average per year. Over the same period, real GDP per capita growth in the EU was 31.7 %, or about 2.0 %, on average per year (see Figure 1).

For the period 2007 – 2021, the changes in the real GDP per capita of our neighbors are as follows:

- Romania – 121.3 % growth (best result among the 13 countries included in the study);
- Greece – 10.4 % drop (the weakest result among the 13 countries included in the study);
- Serbia – 61.8 % growth;
- North Macedonia – 85.1 % growth;
- Turkey – 73.5 % growth.

¹ Established on 15 February 1991 at the meeting between President of the Czech and Slovak Federative Republic, Václav Havel, the President of the Republic of Poland, Lech Wałęsa, and the Prime Minister of the Republic of Hungary, József Antall, in the Hungarian town of Visegrád. The group was created with the aim of moving away from communism and implementing the reforms required for full membership of the Euro-Atlantic institutions, such as NATO and the EU. After the dissolution of Czechoslovakia in 1993, the Czech Republic and Slovakia became independent members of the alliance, incrementing the number of members from three to four. All four members of the Visegrád Group joined the European Union on 1 May 2004 (https://en.wikipedia.org/wiki/Visegr%C3%A1d_Group)

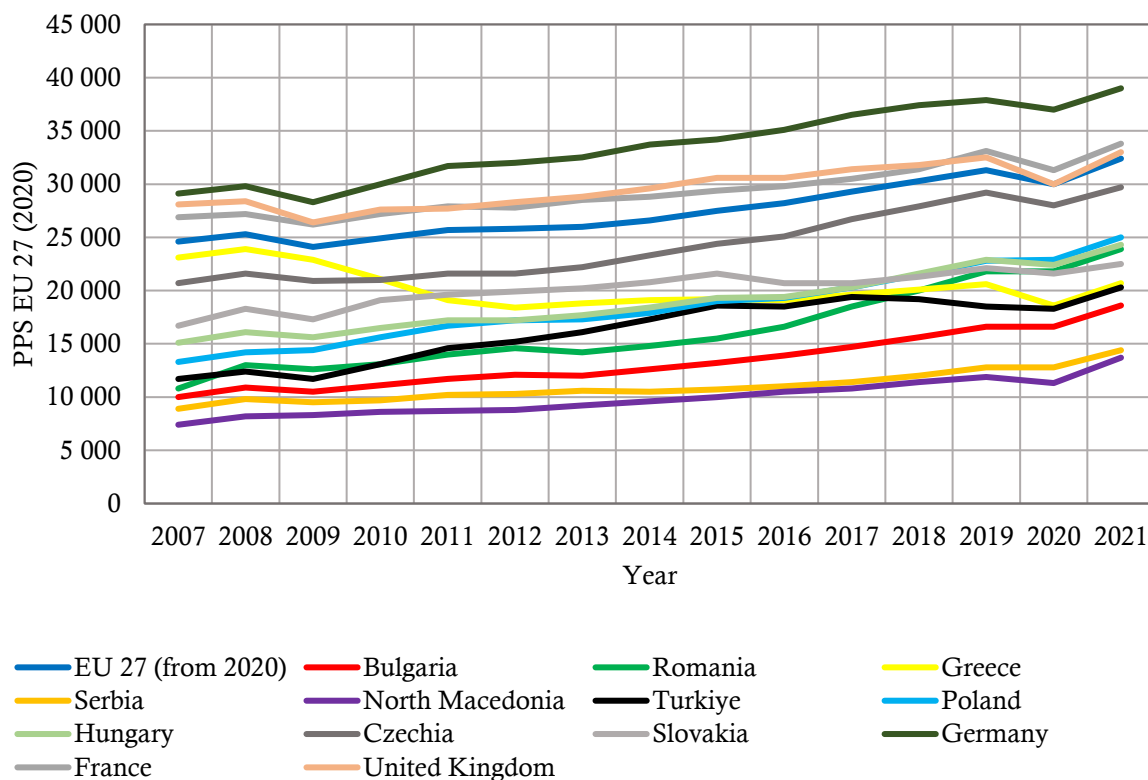
² The PPS is an artificial currency unit used in the EU. Theoretically, one PPS can buy the same amount of goods and services in each country (i.e. “1 EU 27 Euro”). By definition:

$$V_{\text{PPS}} = \frac{V_{\text{NC}}}{\text{PPP}} \quad (1)$$

V_{PPS} is the value in PPSs;

V_{NC} – the value in national currency;

PPP – the purchasing power parity of the country (PPP is the respective exchange rate of PPS, i.e. NC for one PPS).



Source: <https://ec.europa.eu/eurostat>

Figure 1. Real gross domestic product per capita (PPS EU 27, 2020)

Obviously, Romania (with whom we have been competing for the last three decades) scores much better than Bulgaria (the difference is more than 35 percentage points) – see Figure 1!

Within the research period, the real GDP growth per capita in the countries of the Visegrad Four is as follows:

- Poland – 88.0 %;
- Hungary – 60.9 %;
- Czechia – 43.5 %;
- Slovakia – 34.7 %.

In this group (with a much higher starting level than Bulgaria), only Poland is ahead of our country in terms of real GDP per capita growth (see Figure 1).

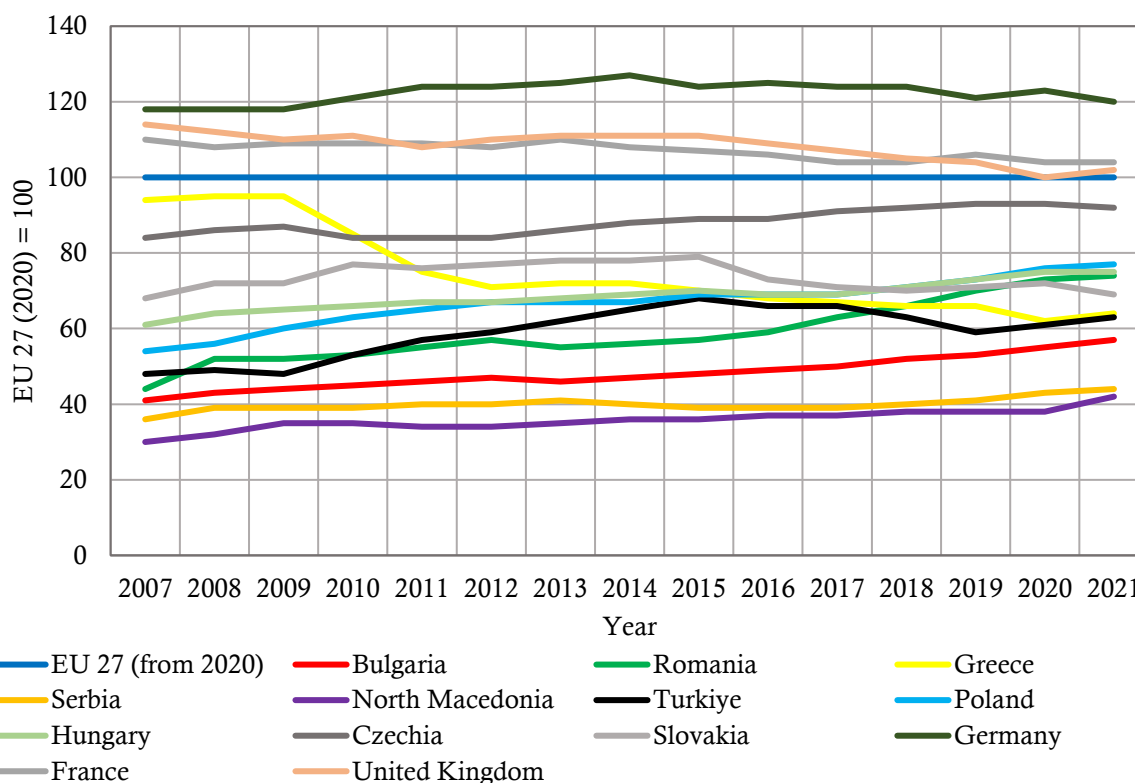
Finally, the three largest economies in the EU (with an even higher starting level than Bulgaria) achieve the following growth in real GDP per capita:

- Germany – 34.0 %;
- France – 25.7 %;
- United Kingdom – 17.4 %.

In summary, for the period 2007 – 2021, the Bulgarian economy is growing at a decent pace. However, in terms of real GDP per capita, Bulgaria remains in last place in the EU (after 15 years of membership). After us (according to this indicator) are only two of the other twelve countries included in the study – Serbia and North Macedonia.

The most appropriate benchmark for the purposes of the comparative analysis in this part of the article is the EU average real GDP per capita. Figure 2 shows the dynamics of real GDP per capita for EU 27 (2020) = 100.

In 2007, according to this indicator, Bulgaria was literally at the bottom of the EU – 41 at EU 27 (2020) = 100. Fifteen years later (unfortunately) it is at the bottom again – sad, but a fact! In 2021, the real GDP per capita in our country is 57 at EU 27 (2020) = 100. There is a growth of 16 points (in 15 years), i.e. about 1 point per year (see Figure 2). At this rate (other things being equal) it will take us more than four decades (somewhere until the early 60s of the 21st century, possibly) to reach the EU average level of real GDP per capita! This is (definitely) not a good prospect!



Source: <https://ec.europa.eu/eurostat>

Figure 2. Real gross domestic product per capita (EU 27, 2020 = 100)

In Romania, the catch up process is twice as fast. In 2007, the real GDP per capita in our northern neighbor was 44 at EU 27 (2020) = 100 (very close to ours), and in 2021 it is already as much as 30 points higher – 74 at EU 27 (2020) = 100. After 2009, Greece (for obvious reasons) moved away from the EU average level of real GDP per capita – from 94 at EU 27 (2020) = 100 in 2007 to an unenviable 64 at EU 27 (2020) = 100 in 2021 (down 30 points). Our western neighbors registered relatively modest results. For the entire period, the real GDP per capita in Serbia increased by 8 points, and in North Macedonia – by 12 points. Turkey recorded a growth of 15 points (see Figure 2).

Of the Visegrad Group, only Poland has a higher catch up rate than ours – real GDP per capita at EU 27 (2020) = 100 increases by 23 points. Of course, because of their higher starting positions, the four countries are currently (2021) much closer to the EU average level of real GDP per capita than Bulgaria:

- Poland – 77 at EU 27 (2020) = 100;
- Hungary – 75 at EU 27 (2020) = 100;
- Czechia – 92 at EU 27 (2020) = 100;
- Slovakia – 69 at EU 27 (2020) = 100.

Traditionally, real GDP per capita in the three largest economies in the EU has been above the EU average. Within the studied period, only Germany recorded a weak growth of 2 points. France and United Kingdom recorded a decline of 6 and 12 points respectively (see Figure 2).

In summary, given the low starting level of real GDP at EU 27 (2020) = 100 in our country, the catch up rates within the studied period (2007 – 2021) are unsatisfactory. In other words, the present is bad and the future is not very optimistic.

INCOME INEQUALITY

The distribution of disposable income after social transfers in modern society depends on:

- the market distribution of income³ and

³ The market distribution of income is a function of:

- the distribution of ownership of the factors of production (human, physical and financial capital) among people; and
- the market prices of factor services (wage, interest, rent and profit).

- the fiscal (including redistributive) policy of the state (taxes, social transfers, etc.).

A traditional method for graphical representation of the distribution of income (or wealth) in society is the so-called *Lorenz curve*, developed by Max Otto Lorenz (1876 – 1959) in 1905 (Lorenz 1905). The Lorenz curve (the red line in Figure 3) shows the cumulative share of the nation's total income (on the y-axis) that belongs to each cumulative share of the population (on the x-axis). The blue line in Figure 3 (with a slope of 1) is called *the diagonal of absolute equality* ($y = x$), and the black right angle (bottom, right) – *contour of absolute inequality* ($y = 0\%$ for all $x < 100\%$, and $y = 100\%$ when $x = 100\%$). Approaching the Lorenz curve to the 45° diagonal of absolute equality indicates a decrease in inequality in the distribution of income in society, and moving the Lorenz curve away from this diagonal – an increase in inequality.

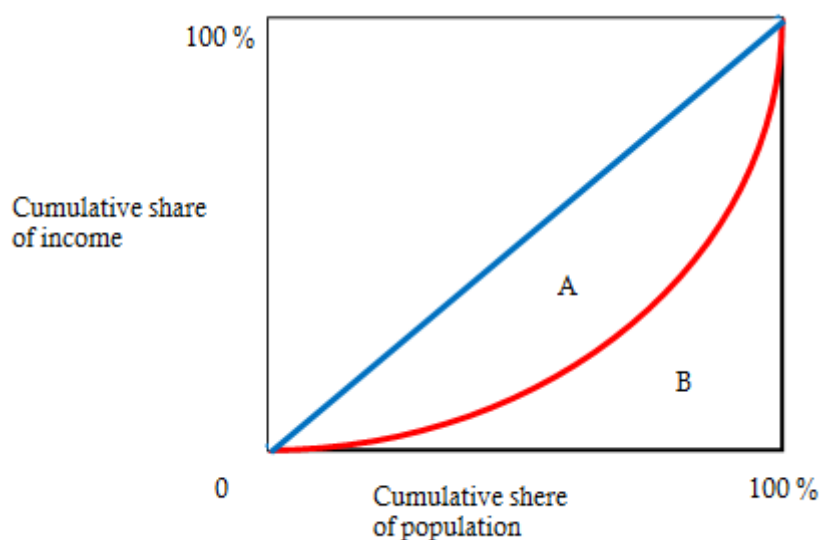


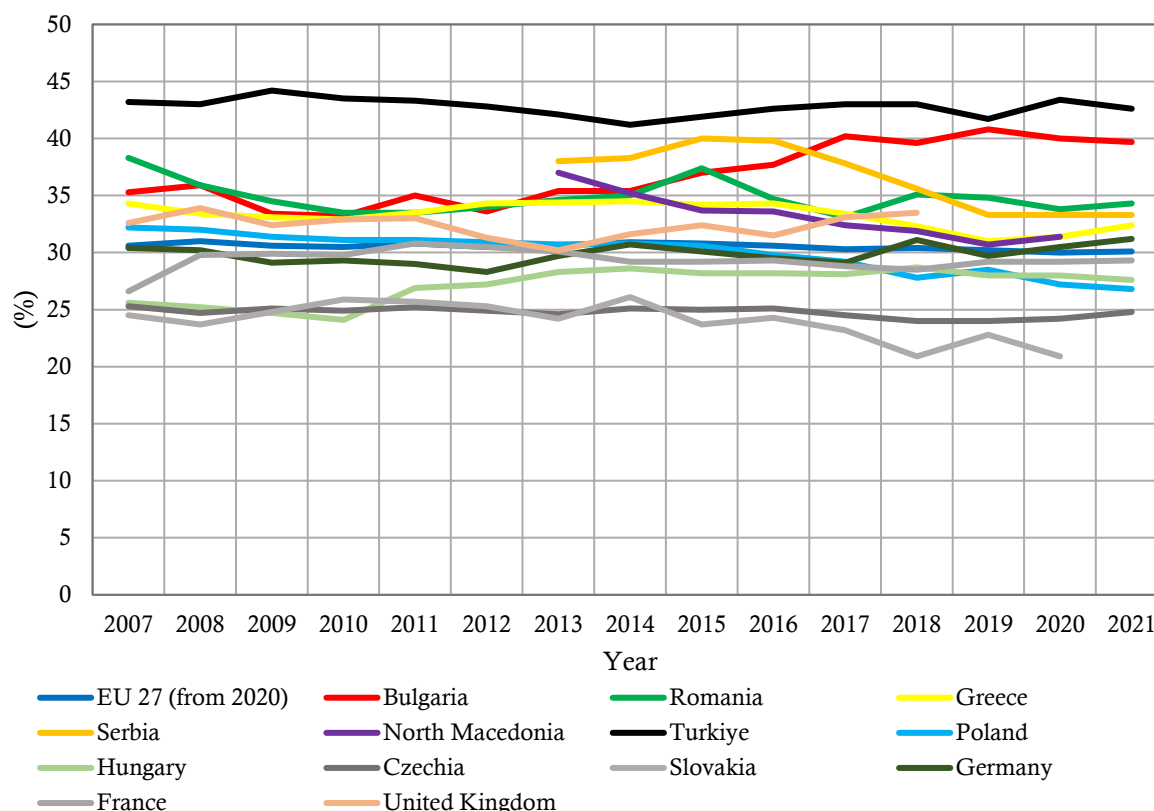
Figure 3. Lorenz curve

The Lorenz curve is the basis for the calculation of one of the most popular indices of inequality in the distribution of income – the so-called *Gini coefficient*, proposed by the Italian statistician, demographer and sociologist Corrado Gini (1884 – 1965) in 1912 (Gini 1912; Gini 1936). If we denote the area between the diagonal of absolute equality and the corresponding Lorenz curve by A , and the area between the Lorenz curve and the contour of absolute inequality by B (see Figure 3), then the Gini coefficient (G) has the following form:

$$G = \frac{A}{A + B} \quad (2)$$

The Gini coefficient changes from 0 to 1. An increase in the coefficient is an indicator of an increase in inequality in the distribution of income in society, conversely – a decrease in the coefficient indicates a decrease in inequality in the distribution of income in society. When the area of figure A is equal to zero, i.e. the Lorenz curve coincides with the 45° diagonal of absolute equality, $G = 0$ ($0 / (0 + B) = 0$). Accordingly, when the area of A covers the entire right triangle below the 45° diagonal of absolute equality (or the area of figure B is equal to 0), $G = 1$ ($A / (A + 0) = 1$).

Figure 4 presents the dynamics of the Gini coefficient in the EU, Bulgaria and the other twelve studied countries for the period 2007 – 2021.



Source: <https://ec.europa.eu/eurostat>

Figure 4. Gini coefficient (equivalised disposable income after social transfers*)

Note: * The equivalised disposable income is calculated in three steps:

- all monetary incomes received from any source by each member of a household are added up; these include income from work, investment and social benefits, plus any other household income; taxes and social contributions that have been paid, are deducted from this sum;
- in order to reflect differences in a household's size and composition, the total (net) household income is divided by the number of “equivalent adults”, using a standard (equivalence) scale: the modified OECD scale; this scale gives a weight to all members of the household (and then adds these up to arrive at the equivalised household size):
 - 1.0 to the first adult;
 - 0.5 to the second and each subsequent person aged 14 and over;
 - 0.3 to each child aged under 14.
- finally, the resulting figure is called the equivalised disposable income and is attributed equally to each member of the household. (<https://ec.europa.eu/eurostat>)

During the first half of the period, the Gini coefficient in Bulgaria fluctuated around 35 percent (with the lowest value of 33.2 % in 2010 and the highest value – 35.9 % in 2008). After 2014, the Gini coefficient in our country went up and reached a new (higher) orbit – the 40 percent (with the highest value of 40.8 % in 2019). In short, within the studied period, inequality in the distribution of income in Bulgaria grew significantly (see Figure 4)!

The Gini coefficient in the EU 27 (from 2020) is slightly above 30 % (fluctuations are within 1 percentage point for the entire period). Thus, in the first half of the studied period, the Gini coefficient in Bulgaria is about 5 percentage points higher than in the EU 27 (from 2020), and in the second half this difference reaches 10 percentage points (10.6 percentage points in 2019). There is a significantly higher (and growing) degree of inequality in the distribution of income in our country compared to the EU 27 (from 2020) – see Figure 4.

Income inequality in Romania and Greece (neighboring EU member states) is lower than in Bulgaria (with few exceptions). In 2021, for example, the Gini coefficient in Romania is more than 5 percentage points lower than in Bulgaria, and in Greece – by more than 7 percentage points (see Figure 4).

In the middle of the research period, the Gini coefficient in Serbia⁴ is slightly higher than in Bulgaria. After that, however, it starts to decrease (especially in the last 3-4 years) and the picture changes. In 2021 (for example) the Gini coefficient in Serbia is more than 6 percentage points lower than in Bulgaria. After 2013, the inequality in the distribution of income in North Macedonia is lower than in Bulgaria (in 2020⁵ the Gini coefficient in North Macedonia is nearly 9 percentage points lower than in our country) – see Figure 4. Within the studied period, the degree of inequality in the distribution of income in Turkey is higher than in Bulgaria – the Gini coefficient there fluctuates from about 42 % to just over 44 %.

Obviously, the inequality in the distribution of income in all neighboring countries except Turkey is lower than in Bulgaria (with small exceptions over time)!

During the whole period, the inequality in the distribution of income in the countries of the Visegrad Four (Poland, Hungary, Czechia and Slovakia) is much lower than in Bulgaria (and lower than the average level for the EU) – see Figure 4. In this group of countries, the Gini coefficient is highest in Poland, followed by Hungary, Czechia and Slovakia (a kind of champion of equal distribution of income across the EU in the last few years). For 2020, the Gini coefficient in Slovakia is almost 20 percentage points lower than in Bulgaria (see Figure 4)!

In the three most developed economies in the EU (Germany, France and the United Kingdom, until 2020) the Gini coefficient fluctuates around the EU average level and (respectively) is lower than in Bulgaria by between (about) 5 percentage points (in the first half of the studied period) and nearly 10 percentage points (in the second half of the period) – see Figure 4.

In summary, for the entire studied period, inequality in the distribution of income in Bulgaria is higher than in the EU 27 (from 2020), the neighboring countries (without Turkey), the countries of the Visegrad Four and the three largest economies in the EU.

SOCIAL WELFARE

A basic tool for a complete and consistent ordering of the various combinations of individual welfare levels according to their attractiveness for society as a whole is *the social welfare function*. The isoelastic function of social welfare⁶ has the following form:

$$W = \frac{1}{1-e} \sum_{i=1}^n (U_i)^{1-e} \quad (3)$$

W is the social welfare;

e – the parameter of inequity aversion ($e \geq 0$)⁷;

U_i – the utility (welfare) of the i^{th} member of society;⁸

n – the number of members of the society ($n \geq 2$).

With $e = 0$, there is no social inequity aversion. Each marginal unit of individual utility has the same social value, regardless of the level of utility (welfare) of the individual. Equation (3) is reduced to the unweighted (additive) *utilitarian social welfare function*. The idea is that society should strive to maximize the total happiness of the community.⁹

When $e \rightarrow \infty$, social welfare is a function of the welfare of the poorest individual (or group of individuals) in society (the welfare of others has no social significance). Equation (3) reduces to *the Rawlsian social welfare function*. Rawlsianism exalts in cult (equality in) the distribution of utility (welfare) between members of society.¹⁰

At $e \in (0, \infty)$, the marginal increase in utility (welfare) of a low-utility individual has a greater social weight than the marginal increase in utility (welfare) of a high-utility individual. As e increases, the weight for equality (fairness) increases. This is the so-called *standard welfare function*. An example of a standard

⁴ Before 2013, there was no data on the Gini coefficient in Serbia and North Macedonia.

⁵ There is no data on the Gini coefficient in North Macedonia in 2021.

⁶ Constant elasticity function.

⁷ When $e = 1$, Equation (3) is undefined and is replaced by $W = \sum_{i=1}^n \log(U_i)$.

⁸ Individual utility (welfare) is a function of the individual's income and other variables.

⁹ The spiritual father of modern utilitarianism (philosophical school of the 19th century) is the English philosopher, jurist and reformer Jeremy Bentham (1748 – 1832). According to Bentham, “the greatest happiness for the greatest number of people is the basis of morality and legislation.”

¹⁰ The idea is of the American moral and political philosopher John Rawls (1921 – 2002).

function is the Bernoulli-Nash social welfare function¹¹ ($e \rightarrow 1$).

If we assume that the social value of the additional lev income is some function of the individual's income, the utility (welfare) in Equation (1) can be replaced by income and an appropriate weight to account for social inequality¹² aversion. Thus, Equation (3) takes the following form:

$$W = \sum_{i=1}^n (\varepsilon_i, Y_i) = \frac{1}{1 - \varepsilon} \sum_{i=1}^n (Y_i)^{1-\varepsilon} \quad (4)$$

W is the social welfare;

ε – the parameter of inequality aversion;

Y_i – the income of the i^{th} member of society;

n – the number of members of the society ($n \geq 2$).

For practical purposes, the so-called *abbreviated social welfare function* is particularly attractive (Kondor 1975):

$$W = W(Y, I) \quad (5)$$

W is the social welfare;

Y – the income of the society;

I – the inequality in the distribution of income among members of society.

Conceptually, the welfare of society as a whole is a function of total income (*efficiency*) and inequality in the distribution of income (*equity*).¹³

Indian economist Amartya Sen, winner of the Nobel Prize in Economics (1998), proposed the following abbreviated social welfare function (Sen 1973):

$$W^S = \bar{Y} * (1 - G) \quad (6)$$

W^S is the social welfare ($0 \leq W^S \leq \bar{Y}$);

\bar{Y} – the average income in society (gross domestic product per capita);

G – the Gini coefficient ($0 \leq G \leq 1$).

\bar{Y} in Equation (6) is a measure of *efficiency*, and $(1 - G)$ – an index of *fairness* (equality) in income distribution.

Equation (6) can be transformed as:

$$W^S = \bar{Y} - \bar{Y} * G \quad (7)$$

$(\bar{Y} * G)$ in Equation (7) represents the cost of (the price of) inequality in the distribution of income in society.

\bar{Y} is calculated as:

$$\bar{Y} = \frac{Y}{n} \quad (8)$$

\bar{Y} is the average income in society (gross domestic product per capita);

Y – the income of the society;

n – the number of members of the society ($n \geq 2$).

If every member of society receives \bar{Y} , $G = 0$ and $W^S = \bar{Y}$. When one member of society receives all

¹¹ Daniel Bernoulli (1700 – 1782) was a Swiss mathematician and physicist who contributed to economic theory, and John Nash (1928 – 2015) was an American mathematician, laureate of the Nobel Prize in Economics (1994) and the Abel Prize for Mathematics (2015). The plot of the famous American film “A Beautiful Mind” from 2001 (adaptation of the book of the same name by Sylvia Nasar, published in 1998) follows the biography of John Nash.

¹² In specialized literature, the term “inequity” refers to the fundamental and institutional unfairness, and the term “inequality” refers to the uneven distribution of income and wealth in society.

¹³ A two-criteria indicator of social welfare.

income ($n * \bar{Y}$), and the income of others is zero, $G = 1$ and $W^s = 0$ – see Equation (6) and Equation (7).

So if $G = 0.3$ ¹⁴ (for example), this means that 70 %¹⁵ of society's income ($Y = n * \bar{Y}$) with this degree of inequality is needed to achieve the same level of social welfare as with an equal distribution of income ($G = 0$):

$$\bar{Y} * (1 - 0.3) = 0.7 * \bar{Y} * (1 - 0) \tag{9}$$

At the beginning of the new century Pundarik Mukhopadhaya (2002) proposed the following generalized form of the Sen's SWF:

$$W^M = \bar{Y}^\beta * (1 - G) \tag{10}$$

W^M is the social welfare;

\bar{Y} – the average income in society (gross domestic product per capita);

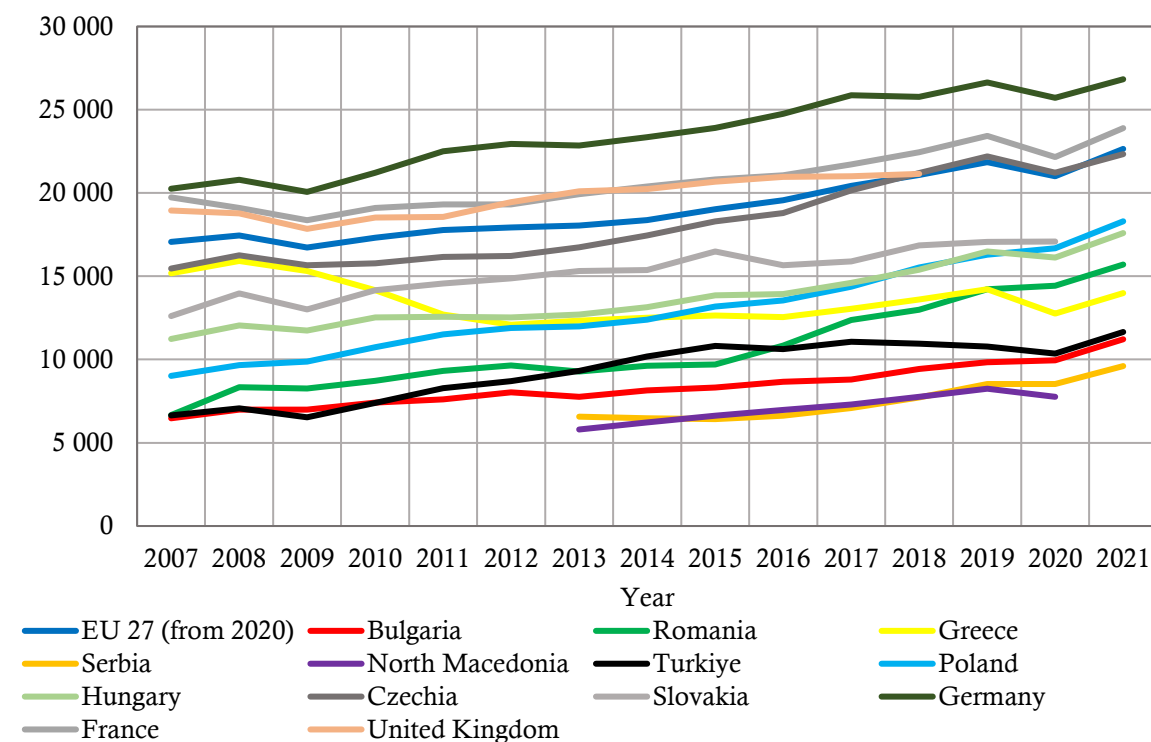
β – the welfare-income elasticity ($0 \leq \beta \leq 1$);

G – the Gini coefficient ($0 \leq G \leq 1$).

When $\beta = 0$ the SWF is a function of inequality (G) only regardless of the level of efficiency of the society (Rawls 1971). When $\beta = 1$ the SWF will become the SWF of Sen (Mukhopadhaya 2003).

For the purposes of the following analysis, we use Sen's classical welfare function.

Figure 5 presents Sen's social welfare function in the EU, Bulgaria and the remaining twelve studied countries for the period 2007 – 2021.



Source: Author's own calculations.

Figure 5. Social welfare function of Sen

Within the studied period, the social welfare in Bulgaria marked a steady growth with a single exception – 2013 compared to 2012. In other words, with each passing year, Bulgarians live better and better! Unfortunately, within the EU, Bulgaria is the country with the lowest level of social welfare for the entire period (see Figure 5). There are three main reasons for this:

- low starting level of real GDP per capita (see Figure 1);
- unsatisfactory rates of catch up economic development (see Figure 2);

¹⁴ 30 %.

¹⁵ $1 - 0.3 = 0.7$ (70 %).

- high (and growing) inequality in income distribution (see Figure 4).
Behind us (again) are only Serbia and North Macedonia (see Figure 5).

In 2007, Bulgaria, Romania and Turkey have almost the same level of social welfare – see the corresponding SWF values of Sen. The following fourteen years, however, Romania is experiencing high rates of economic growth and a reduction in inequality in the distribution of income. Thus “at the end” (in 2021) the difference in social welfare between Bulgaria and Romania is quite serious (in favor of Romania) – see Figure 5. Picture is the same in Poland and Czechia. At a higher starting level, these countries register high rates of catch up economic development combined with decreasing inequality in income distribution and achieve remarkable results. Over the past five years, the level of social welfare in Czechia has fluctuated around the EU average (see Figure 5)!

Within the studied period, Germany is a definite favorite. With impressive rates of economic growth and a Gini coefficient around the EU average, it is clearly ahead of its direct competitors (France and the United Kingdom) and demonstrates an enviable level of social welfare (much higher than the EU average) – see Figure 5.

Finally, the descriptive statistics of the calculated social welfare are presented in Table 1.

Table 1. Descriptive statistics of the aggregated welfare using the SWF of Sen

	N	Min	Max	Mean*	Median**	Standard Deviation***
EU 27 (from 2020)	15	16 725.4	22 647.6	19 087.1	18 380.6	1 827.03
Bulgaria	15	6 470.0	11 215.8	8 372.5	8 139.6	1 253.94
Romania	15	6 663.6	15 702.3	10 670.7	9 636.0	2 560.83
Greece	15	12 088.8	15 917.4	13 534.4	13 053.6	1 169.66
Serbia ¹⁶	9	6 420.0	9 604.8	7 510.1	7 090.8	1 087.50
North Macedonia ¹⁷	8	5 796.0	8 246.7	7 085.2	7 136.4	784.95
Turkiye	15	6 528.6	11 652.2	9 355.6	10 172.4	1 714.64
Poland	15	9 017.4	18 300.0	12 998.0	12 386.8	2 680.61
Hungary	15	11 234.4	17 593.2	13 764.2	13 137.6	1 835.81
Czechia	15	15 462.9	22 334.4	18 262.3	17 451.7	2 446.05
Slovakia ¹⁸	14	12 608.5	17 085.6	15 206.3	15 341.4	1 383.16
Germany	15	20 064.7	26 832.0	23 564.7	23 354.1	2 235.51
France	15	18 366.2	23 896.6	20 718.8	20 390.4	1 635.69
United Kingdom ¹⁹	12	17 846.4	21 147.0	19 685.7	19 772.3	1 097.61

Source: Author's own calculations.

Notes:

$$* \frac{\sum_{i=1}^N W_i}{N}$$

N is the number of values of the SWF of Sen (2nd column in Table 1);

W_i – the i^{th} value of the SWF of Sen (see Figure 5).

** $W \left[\frac{N+1}{2} \right]$ if N is odd;

$$\frac{W \left[\frac{N}{2} \right] + W \left[\frac{N}{2} + 1 \right]}{2} \text{ if } N \text{ is even.}$$

W is the ordered list of values of the SWF of Sen;

N is the number of values of the SWF of Sen (2nd column in Table 1).

$$*** \sqrt{\frac{1}{N} * \sum_{i=1}^N (W_i - \bar{W})^2}$$

N is the number of values of the SWF of Sen (2nd column in Table 1);

W_i – the i^{th} value of the SWF of Sen (see Figure 5);

\bar{W} – the mean of values of the SWF of Sen (5th column in Table 1).

CONCLUSION

¹⁶ For the period 2013 – 2021.

¹⁷ For the period 2013 – 2020.

¹⁸ For the period 2007 – 2020.

¹⁹ For the period 2007 – 2018.

In this article, we studied economic growth, inequality in income distribution and social welfare in Bulgaria for the period 2007 – 2021. The main conclusions from the analysis can be summarized as follows:

- the rates of catch up economic development of our country are unsatisfactory;
- inequality in the distribution of income in Bulgaria is high (and growing);
- the level of social welfare in our country is growing, but it is (still) at the bottom of the EU 27.

REFERENCES

- Eurostat. Online: [<https://ec.europa.eu/eurostat>]. Accessed: 12 May 2023.
- Gini, C. 1936. On the Measure of Concentration with Special Reference to Income and Statistics, Colorado College Publication. *General Series No. 208*, pp. 73–79.
- Gini, C. 1912. Variabilità e Mutuabilità. Contributo allo Studio delle Distribuzioni e delle Relazioni Statistiche, Tipogr. di P. Cuppini, Bologna.
- Kondor, Y. 1975. Value judgements implied by the use of various measures of income inequality. *Review of Income and Wealth*, 21, pp. 309 – 321.
- Lorenz, M. O. 1905. Methods of Measuring the Concentration of Wealth. *Publications of the American Statistical Association*, 9(70), pp. 209 – 219.
- Mukhopadhyaya, P. 2002. Efficiency Criteria and the Sen-type Social Welfare Function. *Indian Economic Journal*, 49(2).
- Mukhopadhyaya, P. 2003. The Ordinal and Cardinal Judgment of Social Welfare Change in Singapore, 1982-99. *The Developing Economies*, 61(1).
- Rawls, J. 1971. *A Theory of Justice*. Harvard University Press.
- Sen, A. 1973. *On Economic Inequality*. Oxford, Clarendon Press.
- Visegrád Group. Online: [https://en.wikipedia.org/wiki/Visegr%C3%A1d_Group]. Accessed: 18 May 2023.