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How the proportional income taxation increases inequality in Bulgaria

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ABSTRACT
The proportional income tax is popular in countries of Central and East Europe and 14 CEE countries adopted it with different tax rates from 1994 till 2008 year. But four of them have replaced it with the progressive tax yet. The main criticisms towards the proportional income tax is that it leads to an increase of the inequality after taxation. The article aims to evaluate the impact of the proportional income tax without non-taxable minimum on inequality in Bulgaria, measured by the Gini index. The relationship between the Gini index and the growth rates of GDP per capita, the gross average income and net average income was studied. The methods of Ordinary Least Square (OLS) and correlation were applied to determine the impact of proportional income tax on income inequality in Bulgaria. The research covers the period from 2008 till 2019. National statistical institute of Bulgaria data (12 observations) has been used. The empirical results confirm positive relationship between Gini index and the growth rates of GDP per capita, the gross average income and net average income in system of proportional income tax. Inequality in Bulgaria had increased by 22% after introducing the proportional income tax in 2008, the highest incomes have increased by 113% and the lowest only by 85%. The results of the study show that the increase of the gross average income and net average income leads to increase of the inequality measured with Gini index. Therefore, after taxation of incomes with proportional income tax the inequality does not decrease, but continues to increase. It may be inferred that the proportional taxation increase inequality in Bulgaria.

KEYWORDS
proportional income tax, inequality, Gini index, OLS method, Bulgaria

JEL H21, H24, D50

Оригинальная статья

УДК 336.228

Как пропорциональное налогообложение доходов увеличивает неравенство в Болгарии

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АННОТАЦИЯ
Пропорциональный подоходный налог популярен в странах Центральной и Восточной Европы. В период с 1994 по 2008 г. четырнадцать стран этого региона ввели пропорциональный подоходный налог с разными налоговыми ставками. Однако четыре из них уже заменили пропорциональный налог прогрессивным. Основная критика пропорционального подоходного налога заключается в том, что его применение увеличивает неравенство после налогообложения. Статья посвящена оценке влияния пропорционального подоходного налога без необлагаемого минимума в Болгарии на неравенство, измеряемое с помощью индекса Джини. Изучена взаимосвязь между индексом Джини и темпами роста ВВП на душу населения, средним валовым доходом и средним чистым доходом. Для определения влияния пропорционального подоходного налога на неравен-

ство доходов в Болгарии применялись обычный метод наименьших квадратов (OLS) и корреляция. Исследование, в котором использованы данные Национального статистического института Болгарии (12 наблюдений), охватывает период с 2008 по 2019 г. Эмпирические результаты подтверждают положительную взаимосвязь между индексом Джини и темпами роста ВВП на душу населения, средним валовым доходом и чистым средним доходом в условиях применения пропорционального подоходного налога. Неравенство в распределении доходов в Болгарии после введения пропорционального подоходного налога в 2008 г. увеличилось на 22%, самые высокие доходы увеличились на 113%, а самые низкие – всего на 85%. Результаты исследования показывают, что увеличение среднего валового дохода и среднего чистого дохода ведет к увеличению неравенства, измеряемого индексом Джини. Таким образом, после налогообложения доходов пропорциональным подоходным налогом неравенство не уменьшается, а наоборот, продолжает увеличиваться. Можно сделать вывод, что применение пропорционального подоходного налога ведет к росту неравенства в Болгарии.

КЛЮЧЕВЫЕ СЛОВА
пропорциональный подоходный налог, неравенство, индекс Джинни, метод наименьших квадратов, Болгария

1. Introduction

Taxation of income is an object of a serious interest of the economists and the politicians. It related with two different type- progressive income tax and proportional income tax (flat tax). Taxes assessed under a progressive system follow an accelerating schedule, so high-income earners pay more than low-income earners. According to M. Popescu et al. [1] the progressive taxation and the benefits of social insurance aim to improve the situation of the poorest individuals in a society. In this taxation if the income increases the tax rate increase too. Therefore, in the progressive tax system the marginal tax rate (MTR) is higher than the average tax rate (ATR).

A flat tax system applies the same tax rate to every taxpayer regardless of income bracket. This means that the flat tax applies the same tax rate to all taxpayers with no deductions or exemptions allowed. According theory in the flat tax system the marginal tax rate (MTR) is equal of the average tax rate (ATR). Therefore, the flat-rate tax is a system of taxation where one tax rate is applied to all personal income with no deductions [2]. Usually, the tax rate is under 20%. Nevertheless, many countries have proposed flat tax systems that keep certain deductions in place.

According to R. Hall and A. Rabuska [3] in a lot of countries in Central and East Europe after 1991 year adopted flat tax as a measure for increasing the budget revenue and stimulate of economic growth. This country has replaced the progressive income tax with a proportional one. Their proposal is for a very precisely defined and coherent tax structure: a combination of a cash-flow tax on business income and a tax on worker income, both levied at the same, single rate [4]. On one hand the base of the business tax would be the difference between receipts from sales, including exports, and payments for purchases of inputs and capital goods, both domestically produced and imported, and to employees. On other hand the tax on workers' income would be assessed on any kind of compensation to labor and on pension benefits. In effect, the R. Hall and A. Rabuska [3] flat tax is a consumption-type, origin-based value-added tax (VAT) collected by the subtraction method, supplemented by a (nonrefundable) tax credit against labor income [5]. The flat tax of the R. Hall and A. Rabuska [3] in their type are not applying in the countries in world. Similar flat tax for the business and workers income in 10% ratio both has been applied in Bulgaria.

On one hand the low rates of the proportional income tax lead to increase of employment, budget revenue, direct foreign investments and stimulates internal consumption [6]. But on the other hand, the proportional tax increases the income inequality. According to M. Kahanec et al. [7] one of the main criticisms towards the proportional income tax is that it leads to

an increase of the inequality after the taxation of the incomes.

The aim of this article is to evaluate the impact of the proportional income tax on inequality in Bulgaria and compere the results with the progressive tax.

According to the basic aim of this article, the following two hypotheses are formulated, the validity of which will be confirmed or rejected:

Hypothesis 1: The proportional income tax increase of income inequality.

Hypothesis 2: The progressive income tax reduces income inequality.

2. Literature review

2.1. The practice of using proportional income tax in Europe

The proportional income tax is popular in countries of Central and East Europe (CEE). The first two countries which introduced proportional tax where Estonia and Lithuania in year 1994. In year 1995, Latvia also adopted a proportional tax. Russia was first a big economy in world which started using a proportional tax in year 2001. In year 2003, Serbia started taxing income with a proportional tax. After that in year 2004, Ukraine and Slovakia adopted the proportional income tax too. Georgia and Romania adopted the proportional income tax in year 2005. In year 2007, three Balkans country North Macedonia, Montenegro and Albania include the proportional income tax in their tax system. To stimulate economic growth Bulgaria in 2008 adopted the flat tax too. The tax rate is 10% and replaced the progressive rates being 20, 22 and 24%.

Table 1 shows the Flat taxes in CEE countries.

Table 1 shows fourteen CEE countries from 1994 till 2008 year adopted the proportional income tax with different

Table 1

Flat taxes in CEE countries

Country	Year of flat tax rate adopted	Personal income tax rate (%)			
		Before reform	After reform	Nontaxable minimum	PIT (%) 2021
Estonia	1994	16–33	26*	Yes	20
Lithuania	1994	18–33	33**	Yes	20–27 (above 81,162 EUR – 32%)
Latvia	1995	25–10 Regressive schedule	25**	Yes	20-31
Russian Federation	2001	12–30	13	Yes	13 (above RUB 5 million – 15%)
Serbia	2003	10–20	14*	Yes	10
Ukraine	2004	10–40	13*	Yes	18
Slovak Republic	2004	10–38	19*	Yes	19 (above 36 256.38 EUR – 25%)
Georgia	2005	12–20	12*	No	20
Romania	2005	18–40	16*	Yes	10
North Macedonia	2007	15–24	12*	Yes	10 (above gross MKD 1,080,00 – 18%)
Montenegro	2007	16–24	15*	Yes	9
Albania	2007	5–30	10**	Yes	13–23
Bulgaria	2008	22–24	10	No	10
Czech Republic	2008	12–32	15**	Yes	15–23

Source: European Commission: Database Taxes in Europe. Available at: https://ec.europa.eu/taxation_customs/taxation-1/economic-analysis-taxation/tax-reforms-eu_en ; ECB Monthly Bulletin September 2007. Available at: https://www.ecb.europa.eu/pub/pdf/mobu/mb200709en.pdf ; Worldwide Tax Summaries. Available at: https://taxsummaries.pwc.com/

Remark:

* Countries with changed tax rate after adopted the proportional income tax

** Countries which replacing the proportional with progressive income tax again

tax rates. Only two of them (Bulgaria and Georgia) do not applying a non-taxable minimum of lowest incomes. For example, one of the bigger tax reforms in Bulgaria is the replacement of the progressive income tax by a proportional income tax in 2008. The personal income tax (PIT) is an important part of tax policy in every country. It is the government significant fiscal tool to regulate of economic acti-vity. The income tax has an impact on employment, savings, investment, income redistribution, economic growth, business cycle, etc. Of course, that not meaning a country once adopted the proportional tax shouldn't make tax reforms again.

For example, as of 2021, the Czech Republic replace the proportional income tax and has reintroduced progressive taxation with a top rate of 23 percent [8]. In 2018, Latvia replaced again its system from a flat tax on personal income to a progressive tax. Prior to this change, Latvia applied a 23 percent flat tax. The new system has three separate brackets, at 20 percent, 23 percent, and 31 percent (31.4 percent prior to 2021). In 2019, Lithuania transitioned from a 15 percent flat personal income tax to a progressive income tax initially with two brackets with rates of 20 percent and 27 percent. The current top rate is now 32 percent.

Several important conclusions can be drawn from the table 1:

1. Countries which increased the tax rates of the proportional income tax- Ukraine, Slovakia, Georgia.

2. Countries which decreased the tax rates of the proportional income tax – Estonia, Serbia, Romania, North Macedonia, Montenegro.

3. Countries which do not change tax rates of the proportional income tax- Russia, Bulgaria.

4. Countries which replacing the proportional income tax with the progressive tax- Lithuania, Latvia, Albania, Czech Republic.

The changes of the tax rates (see Table 1) are related with different reasons- economic growth, business cycle, tax revenue, inequality and etc. Another reason for change of the size of the tax if it inelastic [9].

H. Zee and V. Tanzi [10] argues that any discussion of personal income tax in developing countries must start with the observation that this tax has yielded relatively little revenue in most of these countries and that the number of individual's subject to this tax (especially at the highest marginal rate) is small. Progressive taxes are often designed to collect a greater proportion of income from the rich relative to the poor, thus reducing the inequality of disposable income compared to taxable income [11].

2.2. Proportional tax and income inequality

A popular tool for measuring inequality is the Gini Coefficient. It shows the difference between the well-being of the poor and the rich in one society. The values with which the difference in well-being is measured are from 0 to 100. If the coefficient is equal to 0, then in the economy there is an optimal distribution of income. The higher this coefficient is, the bigger inequality in the incomes is. In countries around the world, the coefficient varies from 25 to 75. The inequality in the distribution of the incomes with the Gini coefficient is recommended to be explored by decile groups [12]. Calculated with the formula:

$$Gr = 1 - 2\sum C_j - 1/k,$$

where C_j – are the cumulative relative parts of the sign by groups; K – the number of the groups.

The inequality can be measured in three ways – by distributing the incomes before the assessment with the taxes, after assessing with taxes and after assessment with the income and providing state social transfers to people with low incomes. The first way shows the structure of society. The second way shows the attitude of the state towards society. The third way includes the social policy of the state. In order to take into account the effect of the tax on inequality, it is good to study the second way.

Figure 1 shows the inequality in the distribution of income measured by the

Gini coefficient after the acceptance of the proportional income tax without the payment of social transfers by the state.

Values over the years range from 33.2 to 40.8. After 2012, the indicator has been steadily rising. The average value of the Gini coefficient for Bulgaria is 36.4, and for the countries of the EU the indicator is 30.7. Inequality in Bulgaria is with 18.6% higher than the average value in the EU and intends the first place for the country. Inequality in Bulgaria had increased by 22%, and for the same period inequality in countries of the EU had decreased by 3.2%. Figure 2 shows the average values of the inequality in the distribution of the income calculated with the Gini coefficient for the countries of the EU and Bulgaria.

The inequality in the distribution of the income describes well the differences between Bulgaria and the EU. While in the countries of the EU it almost hasn't changed, in Bulgaria the inequality has greatly increased in the last years. One of the reasons is the fast growth of the high incomes. Figure 3 shows the increase of the income in the first, fifth and ninth decile.

The increase of the income by decile groups shows that the increase of the high incomes considerably outruns the increase of the lowest incomes. The advancement of the lowest incomes with higher social drains or with a change of the way for assessment of the incomes of this group.

There are several main reasons for the increased inequality:

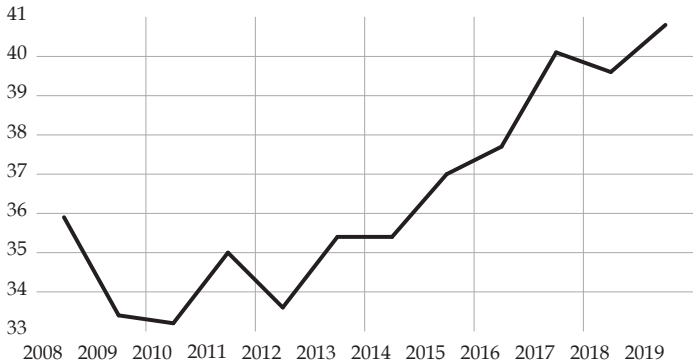

Figure 1. **Inequality the distribution of the income – the Gini coefficient**

Source: Prepared by the author
Data: Eurostat

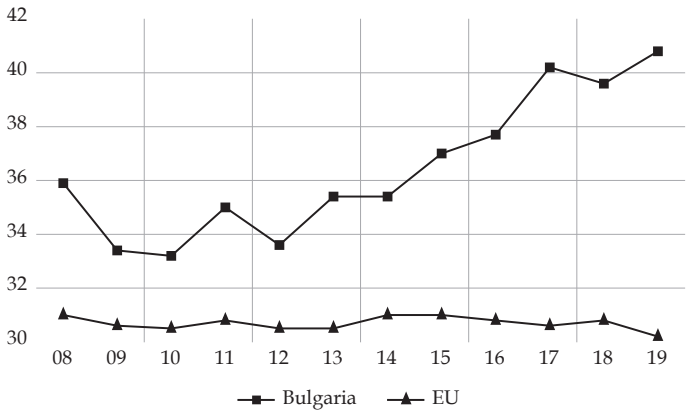

Figure 2. **Inequality in the distribution of the income – Gini coefficient, on average for the countries of the EU and Bulgaria**

Source: Prepared by the author
Data: Eurostat

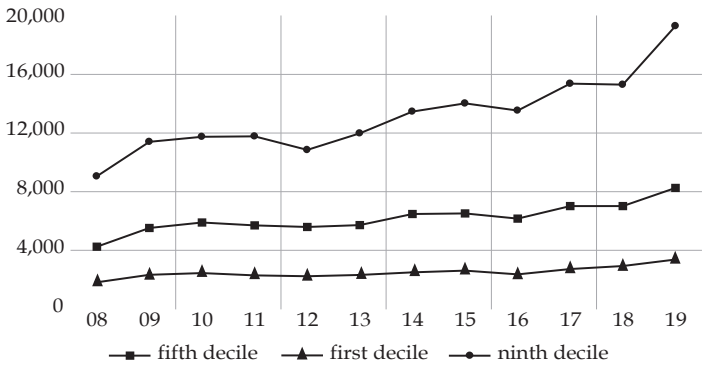

Figure 3. **Increasing the nominal value of income in the first, fifth and ninth decile**

Source: Prepared by the author
Data: National Statistical Institute of Bulgaria

Firstly, the fast increase of the salaries of the highest incomes (ninth decile) and comparative the slower increase of the lowest incomes (first decile). The highest incomes have increased by 113% and the lowest by 85%. This shows that the increase in high incomes is with 33.2% higher than the low ones. For example, in 2019, 20% of the population with highest income received 11.2 times more than the 20th% of the people with lowest income.

Secondly, the lack of redistributive effect of the proportional income tax. It does not redistribute incomes, which increases inequality. For example, the minimum salary has increased by 177% but this does not reduce the inequality.

Thirdly, the theory of the proportional tax is associated with the so-called negative tax. It supposes an active social policy on the part of the government. The lack of an adequate social policy also supports the increase in inequality. One of the main reasons for the higher levels of inequality in Bulgaria compared to the EU-27 is the difference in the costs of social assistance by the public sector [12].

2.3. Empirical Research on Inequality in Income Distribution

The inequality in the distribution of the incomes has been thoroughly analyzed. The empirical results have been published in different research.

A. Moździerz [13] examines the inequality in Poland, the Czech Republic, Slovakia and Hungary for the period 2005–2013. It proves with empirical analysis that inequality in Slovakia has decreased after the removal of the proportional tax and the return of progressive assessment. In the Czech Republic, the increase in social state transfers has led to a degradation of the inequality.

S. Kozuharov et al. [14] examine the GINI index in North Macedonia for the period 2003–2014. They publish results that the proportional income tax increases the inequality.

In another research for Bulgaria conducted by S. Mihaylova et al. [15] are examined the determinants of the inequality for the period 2005–2015. The variables are used – GDP (Gross domestic product) of part of the population, share of the services sector in gross value added, foreign direct investment, rate of growth of the inflation, social costs and gross coefficient of the registered in secondary education. Empirically with OLS she proves that the growth of GDP of part of the population and the share of the services sector, as a share of the gross value added, lead to greater differentiation of the incomes.

J. Hallaert [16] also examines the inequality in Bulgaria for the period 2007–2019. It empirically proves that the disparity of disposable incomes in Bulgaria has increased and is the highest in the EU. It is pointed out that Bulgaria does not compensate the increase in inequality in market incomes, unlike most EU countries.

The redistribution through the budget has decreased and is among the lowest levels in Europe. This decline is due to the introduction of the proportional income tax and the low share of social spending. This leads to a significant increase in disposable income inequality.

T. Gunov et al. [12] study the inequality in Bulgaria for the period 2007–2016. Empirically confirm that the GINI index in Bulgaria has increased by 8.5% after the acceptance of the proportional income tax over the income. In the EU countries, the average increase is 0.6%. They recommend that the high levels of income inequality seriously increase the risk of social exclusion, which bring a number of negative consequences, the most significant of which are the reduction of labor productivity and opportunities for economic growth.

S. Cohen [17] examines the inequality in the USA. It proves that if the proportional income tax is accepted, inequality in low and medium incomes will increase.

M. Kahanec et al. [7] examine the Gini coefficient for the Czech Republic for the period 1958–2010. They prove that the proportional tax over the income accepted in 2006 has increased the inequality.

D. Duncan et al. [11] examine the inequality in the income for 55 countries for the period 1981–2005. With OLS, they found evidences that increasing the sizes of the progressive tax for the high incomes leads to a reduction in the inequality. In countries that have accepted a proportional tax, the inequality in the incomes is increasing.

S. Biswas et al. [18] for the period 1980–2008 empirically prove for the US economy that if taxation reduces poverty the economic growth increases.

S. Ilie [19] examines the inequality for the period 2006–2016 in Romania. Empirically confirms that the increase of the income after proportional taxation increases the inequality. In another research [1] for Romania for the period 2016–2018 it has been empirically proven that the proportional income tax over the income leads to an increase of the inequality.

M. Arandarenko et al. [20] concluded that the value of the Gini coefficient spanning 38.0 to 38.6 for the period 2013–2016 indicates a relatively stable but high income inequality in Serbia. In another research conducted by G. Krstić [21] for the period 2006–2013 is confirmed that Serbia faces high and rising income inequality.

F. Mihaescu et al. [22] compere inequality in 2004 and 2005 in Romania. Empirically confirms that the increase of the income after proportional taxation increases the inequality. They recommend to replace the flat tax by a progressive tax, with two or three brackets, with large differences between them.

B. Martorano [23] examine the inequality in the income for 14 countries in Latin America for the period 1990–2010. Empirical confirms that the increasing contribution of direct taxes with respect to indirect taxes promoted the progressivity of the tax system and contributed to the reduction of inequality.

Several main conclusions can be pointed out from the empirical assessments. First, all researches claim that proportional income tax increases the inequality after assessment of the incomes. Second, the progressive tax has the opposite effect, i.e. reduces inequality. Third, with a proportional income tax, the government can reduce the inequality by increasing social spending.

3. Empirical research and results

In the present research are applied the methods – OLS and correlation. Annual Bulgarian National Statistical Institute data for the period 2008–2019 were used, with 12 observations included. The variables used are the Gini coefficient, GDP per capita, gross average income, net average income. The data included in the research, with the exception of the Gini coefficient, are growth rates.

The single root test of the Gini index, GDP per capita, gross average income and net average income show that the all variables are stationary as a group (see Table 2).

The results of the evaluation of the Equation for the dependent variable in the OLS model Gini index are shown in Table 3.

The variables in the equation of OLS model are statistically significant at a critical level of 10%. The greatest influence over the growth of the inequality have GDP per capita and gross average income. Therefore, the inequality in the distribution of the incomes before assessment increases significantly. Net average income also has a positive but lesser impact. This means that after proportional taxation, the difference in income inequality continues to increase, not decrease. The last term is a constant, which is also statistically significant.

The value of the coefficient of determination (R-squared = 0.59) shows that 59% of the change in the Gini Index in Bulgaria can be explained by the changes in the independent variables. The probability of the F-statistic (Probability F-statistic = 0.05) shows that the alternative hypothesis for the adequacy of the model used is confirmed.

The following important clarification should be made here, and exactly that this does not necessarily mean that the model used is the best possible. It simply adequately reflects the relationship between the variables included in the model. The correlation coefficients confirm the results of the equation (see Table 4).

Table 2

Group test for stationarity of the growth rates of GINI INDEX, GDPPC, GAI и NAI

Method	Statistic	Probability	Cross-sections	Observations
Null hypothesis: There is a single root (allows the existence of common processes of a single root)				
Levin, Lin and Shu t*	–2.21387	0.0134	4	43

Source: Prepared by the author

Table 3

Results of the econometric estimation of the target variable Ginny Index

Variable	Coefficient	Standard error	t-statistics	Probability
GDPPC	0.556461	0.262389	2.120748	0.0667
GAI	0.519882	0.255133	2.037693	0.0759
NAI	0.087652	0.258587	2.041638	0.0706
Constant	29.81570	2.460641	12.11704	0.0000

R-squared	0.596002	Mean dependent var	36.42500
Adjusted R-squared	0.444503	S.D. dependent var	2.639258
S.E. of regression	1.967083	Akaike info criterion	4.452182
Sum squared resid	30.95531	Schwarz criterion	4.613817
Log likelihood	–22.71309	Hannan-Quinn criter.	4.392338
F-statistic	3.934031	Durbin-Watson stat	2.506759
Prob(F-statistic)	0.053871		

Data: National Statistical Institute of Bulgaria
Source: Prepared by the author

Table 4

Correlation of GINI INDEX, GDPPC, GAI and NAI

Variable	GINI INDEX	GDPPC	GMS	NMS
GINI	1			
GDPPC	0.588097	1		
GAI	0.502419	0.011775	1	
NAI	0.454947	0.472076	0.247421	1

Source: Prepared by the author

The results of the CUSUM test (Figure 4) show that the Gini Index Equation is not stable in dynamic time. Actual CUSUM values are within the confidence interval at a 5% significance level over a longer period of time, but go beyond these limits.

Testing for the absence of serial correlation of disturbance shows that the null hypothesis is rejected (see Table 5). The results of the test for heteroscedasticity of the residues listed in Table 6 are grounds for accepting the null hypothesis of no heteroscedasticity.

The probability of the Jarque-Bera statistic is 0.5 (see Figure 5), which is a reason to accept the null hypothesis of a normal residual distribution.

The presence of a serial correlation of the disturbances is associated with the small number of observations, which is 12.

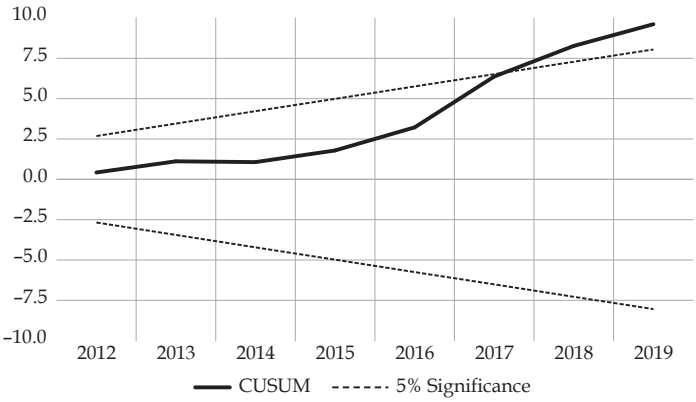

Figure 4. **CUSUM test for dynamic stability in the Gini Index Equation**

Source: Prepared by the author

Table 5

Results of the serial correlation test of the residues in the Gini Index Equation

F-statistic	5.676150	Probability F (2,42)	0.0413
Observations R^2	7.850694	Probability Chi-square (2)	0.0197

Source: Prepared by the author

Table 6

Results of the residual heteroscedasticity test in the Gini Index Equation

F-statistic	1.603492	Probability F (3,43)	0.2635
Observations R^2	4.506133	Probability Chi-square (3)	0.2117

Source: Prepared by the author

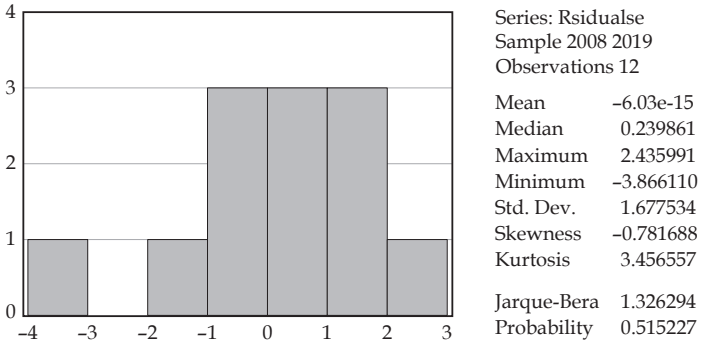

Figure 5. **Test for normal distribution of residues in the Gini Index Equation**

Source: Prepared by the author

4. Conclusion

The results of the study show that the increase of the gross average income and net average income leads to increase of the inequality measured with Gini index. Therefore, after taxation of incomes with proportional income tax the inequality does not decrease. The conclusions of the empirical analysis show that after the taxation of the incomes with a proportional income tax, the inequality in Bulgaria does not decrease, but continues to increase.

The inequality in the distribution of the incomes in Bulgaria continues to deepen. High incomes increase faster than low incomes. The high growth of the minimum salary does not lead to a reduction in inequality. The low proportional income tax without non-taxable minimum not only does not reduce inequality but helps to increase it. A way out of this situation can be searched in two ways. First, by changing the way income is taxed, accepting a non-taxable minimum or returning the progression income tax before the reform. Second, while preservation the status quo, it is necessary to direct efforts by the government to increase social payments to those at risk of social poverty, to the so-called working poor.

References

1. Popescu M., Militaru E., Stanila L., Vasilescu M., Cristescu A. Flat-Rate versus Progressive Taxation? An Impact Evaluation Study for the Case of Romania. *Sustainability*. 2019;11(22):6405. https://doi.org/10.3390/su11226405

2. Ferreira Z., Veiga F. The Revolution of the Tax System based on Flat Tax. *Athens Journal of Law*. 2019;2(4):253–268. https://doi.org/10.30958/ajl.2-4-4

3. Hal R., Rabushka A. *The Flat Tax*. 2nd ed. Stanford, CA: Hoover Institution Press; 1995. Available at: https://www.hoover.org/research/flat-tax

4. Peichl A. Flat-rate tax systems and their effect on labor markets. *IZA World of Labor*. 2014:61. https://doi.org/10.15185/izawol.61

5. Keen M., Kim Y., Varsano R. *The "Flat Tax(es)": Principles and Evidence*. IMF Working Paper WP/06/218, 2006. 51 p. Available at: https://www.imf.org/en/Publications/WP/Issues/2016/12/31/The-Flat-Tax-es-Principles-and-Evidence-19892

6. Ambrus A. The advantages and backdraws of the flat-rate personal income tax. *Journal of International Studies*. 2012;5(2):47–57. https://doi.org/10.14254/2071-8330.2012/5-2/5

7. Kahanec M., Guzi M., Martišková M., Paleník M., Pertold F., Siebertová Z. *Gini Country Report Czech Republic and Slovakia*. CELSI Research Reports No. 7. 2013. 171 p. Available at: https://www.celsi.sk/en/publications/research-reports/detail/2/gini-country-report-the-czech-republic-and-slovakia/

8. Krajňák M. Evaluation the impact of the personal income tax reform in the Czech Republic in 2021 on effective tax rate and tax progressivity. *Journal of Tax Reform*. 2021;7(2):134–145. https://doi.org/10.15826/jtr.2021.7.2.094

9. Vegh C., Vuletin G. *How is tax policy conducted over the business cycle?* NBER Working Paper. National Bureau of Economic Research; 2012. 53 p. https://doi.org/10.3386/w17753

10. Zee H., Tanzi V. *Tax Policy for Emerging Markets: Developing Countries*. IMF Working Paper No. 00/35, 2000. 34 p. Available at: https://www.imf.org/en/Publications/WP/Issues/2016/12/30/Tax-Policy-for-Emerging-Markets-Developing-Countries-3471

11. Duncan D., Peter K. *Unequal Inequalities: Do Progressive Taxes Reduce Income Inequality?* IZA Discussion Paper No. 6910, 2012. 64 p. Available at: https://docs.iza.org/dp6910.pdf

12. Gunov T., Belukhova-Uzunova R. Income Inequality in Bulgaria After the Accession to the European Union, Scientific Works. *Academic Publishing House of the Agricultural University – Plovdiv*. 2018;2:97–104. Available at: http://nauchnitrudove.au-plovdiv.bg/18_02_10/

13. Moździerz A. Tax Policy and Income Inequality in the Visegrad Countries. *Naše gospodarstvo/Our Economy*. 2015;61(6):12–18. https://doi.org/10.1515/ngoe-2015-0022

14. Kozuharov S., Petkovski V., Ristovska N. The impact of taxes measured by Gini index in Macedonia. *UTMS Journal of Economics*. 2015;6(1):41–52. Available at: https://www.utmsjoe.mk/files/Vol.%206%20No.%201/6-1-3-UTMS_Journal_of_Economics.pdf

15. Mihaylova S., Bratoeva-Manoleva S. Social Transfers and Income Inequality in Bulgaria. *South East European Journal of Economics and Business*. 2017;12(1):38–49. https://doi.org/10.1515/jeb-2017-0003

16. Hallaert J. *Inequality, Poverty, and Social Protection in Bulgaria*. IMF Working Paper, WP/20/147, 2020. 34 p. Available at: https://www.imf.org/en/Publications/WP/Issues/2020/07/31/Poverty-and-Social-Protection-in-Bulgaria-49552

17. Cohen S. The Vanishing Case for Flat Tax Reform: Growth, Inequality, Saving, And Simplification. *Valparaiso University Law Review*. 1999;33:819–853. Available at: https://scholar.valpo.edu/vulr/vol33/iss3/2

18. Biswas S., Chakraborty I., Hai R. Income Inequality, Tax Policy, and Economic Growth. *The Economic Journal*. 2017;127(601):688–727. https://doi.org/10.1111/ecoj.12485

19. Ilie S. Income Inequalities in Romania in the Aftermath of the 2008 Economic Crisis. *Romanian Journal of Economic Forecasting*. 2020;23(2):115–130. Available at: https://ipe.ro/rjef/rjef2_20/rjef2_2020p115-130.pdf

20. Arandarenko M., Krstić G., Rakić J. *Analysing Income Inequality in Serbia: From Data to Policy*. Belgrade: Friedrich-Ebert-Stiftung; 2017. 8 p. Available at: https://library.fes.de/pdf-files/bueros/belgrad/14010.pdf

21. Krstić G. Why income inequality is so high in Serbia: Empirical evidence and a measurement of the key factors. *Economic annals*. 2016;61(210):23–46. https://doi.org/10.2298/EKA1610023K

22. Mihaescu F., Voinea L. *The Impact of the Flat Tax Reform on Inequality: The Case of Romania*. Wiiw Balkan Observatory Working Papers No. 81, 2009. 23 p. Available at: https://wiiw.ac.at/the-impact-of-the-flat-tax-reform-on-inequality-the-case-of-romania-dlp-3217.pdf

23. Martorano B. Taxation and inequality in developing countries: Lessons from the recent experience of Latin America. *Journal of International Development*. 2018;30(2):256–273. https://doi.org/10.1002/jid.3350

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