

THE LABOUR SHARE IN HOUSEHOLDS' INCOME INEQUALITY IN ROMANIA

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Abstract: *The aim the paper is to analyse the relationship between the labour share in the households' income and inequality expressed by Gini coefficient in Romania during 1997-2020. Based on data from National Institute of Statistics of Romania, we provide evidence that high shares of labour income in total households' income are associated with high values of estimated Gini coefficient and labour and wages share could explain households' income inequality. We also highlighted the link of income inequality and income labour share to economic growth. Economic growth is associated with reducing levels of income inequality only in short periods of time. Policy makers should give attention to the evolution of labour share in the total income of households. Appropriate public policy measures regarding the improvement of labour market outcomes are required in order to prevent the rise of wage inequality.*

Key words: income inequality, households, labour income, economic growth

JEL Classification: D10, I30, I38, J38

1.Introduction

Income inequality remained a special concern of governments, especially in last years, when Pandemics extended the gap between poor and rich. Population is affected by disparities in earnings even though the global economy is more prosperous.

In the case of Romania, the rising levels of macroeconomic results (i.e., Gross Domestic Product per capita) is accompanied by the increase of income inequality. The Gini coefficient estimated by the World Inequality Income Database (WIID) for income inequality in Romania registered increasing levels year by year, from 21.6 in 1990 to 34.1 in 2020.

A very few studies are focused on the income inequality in Romania even the issue of poverty and social polarisation are on the agenda of policy makers and in the European framework of social policies.

The aim of the paper is to analyse the relationship between the labour share in the households' income and inequality expressed by Gini coefficient in Romania. It is highlighted the contribution of wage income inequality to the inequality of households' income of Romania. This is explained by the significant labour share income in the total gross income of households. Our study reveals that higher shares of labour income are associated with higher income inequality and economic growth. The contribution of the paper to the existing literature is threefold. First, unlike the most studies focused on income inequality using the variable of labour income as a share of GDP (expressed by the gross compensation of employees), our study is based on labour income as share of households' income. In this way we give a more accurate view on income inequality in Romania. Second, the results are based on authors' own estimation of inequality measure (Gini coefficient) for gross total income of households and its components: wage income and social benefits. Third, there are very few recent studies on inequality of households' income for Romania. The remainder of the paper is structured as follows. After a short literature review, data and methodology are described. It follows the section of exposing the main findings are exposed, and finally, the conclusions are presented.

2.Literature review

The literature focused on the link between labour income share and income inequality is not very rich. Daudey and Garcia-Penalosa (2007) found that higher labour shares are associated with lower income inequality in 39 developed economies between 1970-1994. In 2010, the same authors revealed similar results in the case of 16 OECD countries for 1960-2000. Adler and Schmid (2013) found that decreasing labour income shares are associated with increasing income inequality in Germany over the period of 2002-2008. Similar results were revealed by Jacobson and Occhino (2012) in the case of USA economy. Francese and Mulas-Granados (2015) found that labour share is not determinant for inequality, but wage inequality, in a study covering 93 countries during 1907-2013.

Other studies conducted for developed economies suggest also that lower labour income shares are associated with higher income inequality expressed by Gini coefficient (i.e., Dao et al., 2017; IMF, 2017; Sauer et al., 2020). In the same line, Erasuskin (2020) provided an empirical investigation on how higher income

inequality is associated with decreasing share of labour income in a study comprising of 62 countries over the period of 1990-2015.

Blundell et al. (2018) developed a study in Britain and USA on interaction between labour market earnings in the family and household income inequality. They found that the welfare system played an important role on equalizing the income growth across the wage inequality.

Analyses of income inequality in the case of Romania are less present in the literature. All studies developed by Romanian authors revealed that income inequality grew during all years since 1990, Romania being one of the most unequal in the EU (Precupețu, 2010). Molnar (2010a, 2010b) analysed the income distribution in Romania and revealed the increase in inequality and polarization mainly after 2000 year. The conclusions show that Romania faces increasing levels of households' income inequality and a large share of households with low income. The redistribution policy (through social transfers) contributed to the inequality mitigation but was not enough to master the rise of income inequality.

The relationship between income inequality and economic growth is largely study in recent years.

The findings are mixed: some of them state that inequality is irrelevant for economic growth, other reveal that it is harmful for growth or it promotes growth. A group of studies found no association between income inequality and growth (Forbes, 2000; Panizza, 2002, Kray, 2015); Some of studies identified a significant negative effect of inequality on economic growth (i.e., Ostry and Berg, 2011; Oustry et al., 2014; Cingano, 2014). Shin (2012) concluded that both situation (positive or negative relationship between income inequality and economic growth) are possible because higher inequality can retard economic growth in early stage of economic development and income redistribution is no always effective for inequality reduction.

Income inequality can affect economic growth in several and complex ways and various channels. Its impact on economic growth could be significant and negative mainly in the presence of high level of poverty (Breunig and Majeed, 2020). In economies with low level of opportunities the income inequality has a higher influence on economic growth while in economies with high opportunities the rise of income inequality is less harmful for growth (Aiyar and Ebeke, 2020).

Regarding how we can explain the trend of income inequality the study developed by Sauer et al. (2020) for 73 countries found that the declining labour income shares and increasing imports from developed countries has a rising effect on income

inequality while taxation and imports from low-developed countries has a compensation effect.

The present paper aims to cover the existing gap in the literature being focused on inequality of households' income of Romania by assuming the following objectives: (1) analysing the evolution of labour income share in the total gross income of households; (2) analysing the households' income inequality by estimating the Gini coefficient for the total gross income and its components (wages and social benefits); investigating the following possible associations: labour share income-total gross income inequality, GDP per capita- total gross income inequality, total gross income inequality-wage share income, total gross income inequality -wage inequality, GDP per capita-labour share income; (3) investigating the causality between the considered variables.

3.Data and methodology

The income concept used in the paper is gross income of households, regarded as the best proxy of the household's welfare (i.e., Molnar, 2010a).

Our data are extracted from National Institute of Statistics (NIS) of Romania regarding the income households, namely total gross income, gross salaries and social benefits for the period of 1995 to 2020. In the Romanian database, the total gross income includes in kind income (the value of benefits in kind received by individuals and value of consumption of agricultural products from own resources) and monetary income (gross wage earnings, income from agricultural, non-agricultural and independent activities, income from property, social benefits, property income. We used data sets on households' income structured by deciles.

Gini coefficient introduced by Corrado Gini (1912) is a popular measure of income distribution. It is computed based on the difference between the income of household taken two by two. Its null value means an equal distribution of income among individuals/households and the value of 1 signifies the case of perfect inequality.

We estimate the Gini coefficient of households' income by using the formula:

$$G = \frac{n+1}{n-1} - \frac{2}{n(n-1)\bar{y}} \sum_{i=1}^n i y_i \quad (1)$$

where: y_i is the income variable, i -represents the rank of each household in descending order, \bar{y} is the average of variable y_i , n is the total number of households. We calculated the share of labour income in total household income as the share of salaries, income from agriculture, non-agricultural and independent activities. The

values of estimated Gini coefficient based on formula (1) are included in the Appendix.

In order to analyse the correlation between households' income inequality (expressed by the estimated Gini coefficient) and other explanatory economic variables (income labour share, income wage share, Gross Domestic Product per capita) the following model will be used:

$$y = a + b * x \quad (2)$$

where: y is the dependent variable and x is the explanatory, independent variable.

The Anova test will be used in order to validate the association between x and y. A value of SignF under the threshold of 5% indicates validated correlation and the value of the coefficient of determination indicates the extent to which the independent variable can explain the variation of the dependent variable.

In order to find the direction of causality relationship between paired variables, the Granger causality test (1969) will be used. The null hypothesis is that a variable x does not Granger- cause a variable y. If the value of Prob. is higher than 0.05, the null hypothesis (H0) is accepted, meaning that x does not cause y. Alternatively, if the value of Prob. is lower than 0.05, the null hypothesis is rejected meaning that the Granger causality runs from x to y.

4. Main findings

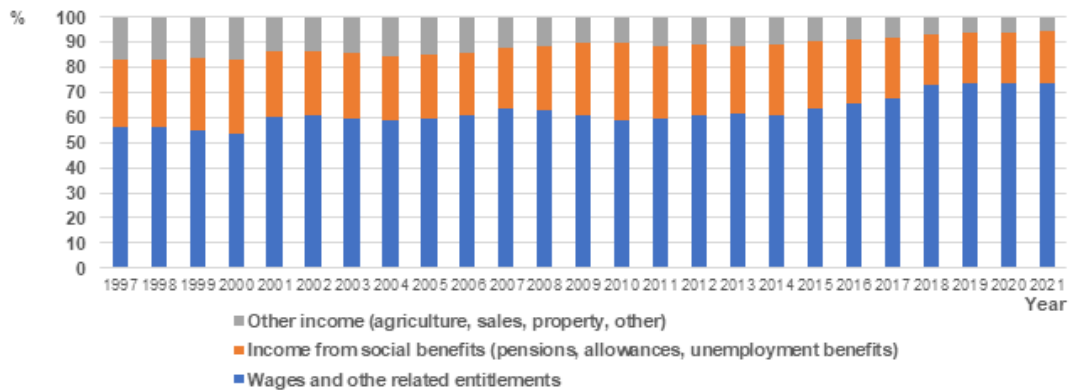


Figure 1 Structure of monetary income of households in Romania (1997-2021)
Source: authors' own computation based on National Institute of Statistics data

Gross wages and wage entitlements have a significant share in the total of households' monetary income, namely 56-72%. Their share increased over time, from 56,6% in 1997 to 72,6% in 2021, due to the reduction of the share of other income and social benefits (Figure 1). The share of income from social benefits

decreased from 17,25% to 5.77%, over the analysed period. A first conclusion that can be drawn is that the dynamics of wages can have a large influence on households' income inequality, given their considerable share in the total household income.

Based on NIS data, we estimated the share of labour income in the total monetary household income, as the sum of income from wages and salaries, income from sales (agricultural products), income from own-account activities (crafts, trade, transport), receipts from companies and agricultural associations.

The share of labour income in the total household money income has an increasing trend, strongly accelerated after 2010. In the period 1997-2010 it has an oscillating evolution around 67%. The period after 2010 is one of recovery (after the financial and economic crisis). During this period of expansion there are two moments of decline, namely in 2014 (compared to 2013) and then in 2021 (compared to 2020), but the increase is significant, from 65.37% to 77.39% of total money income (Figure 2).

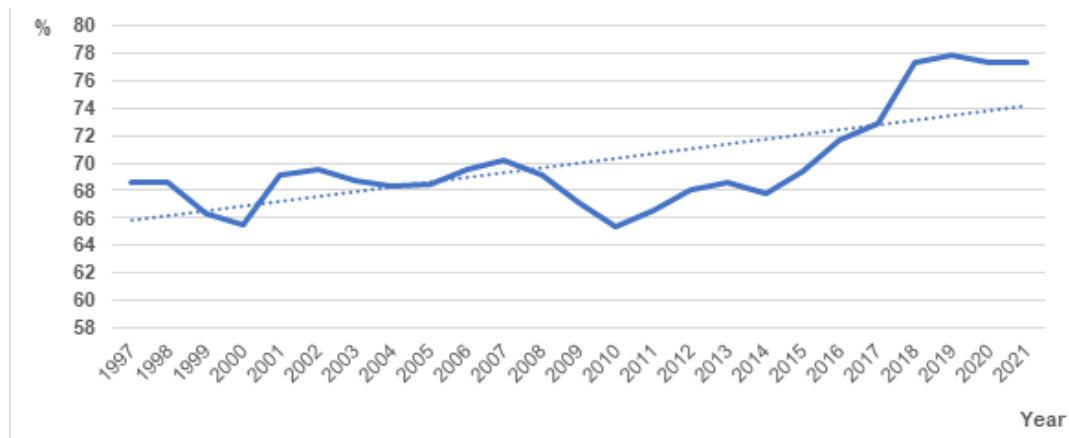


Figure 2 The share of labour income in Romania (1997-2021)
Source: authors' own computation based on National Institute of Statistics data

We estimated the GINI coefficient based on formula (1) for gross total income, for wages and for social benefits, their values are displayed in Figure 3.

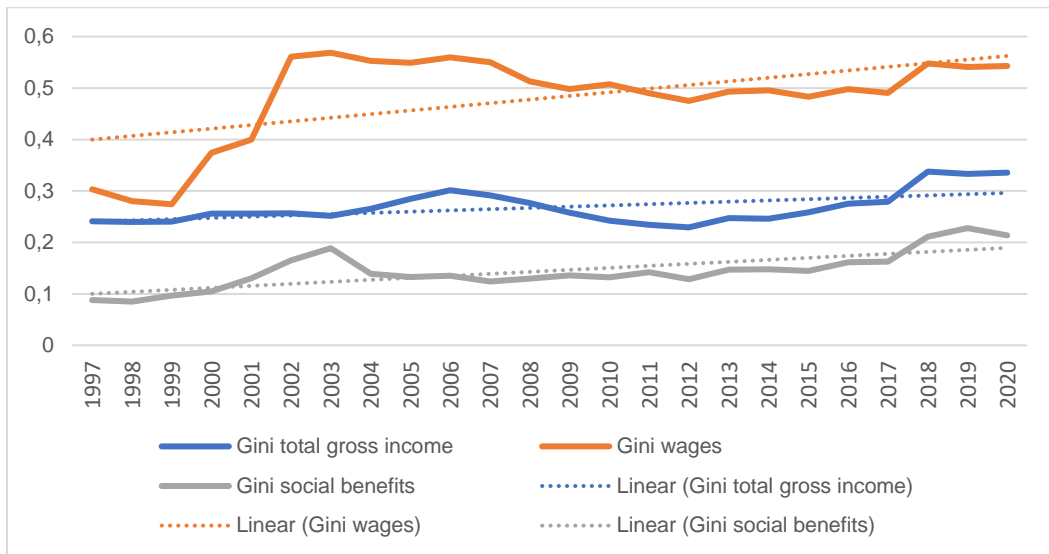


Figure 3 Dynamics of inequality of total gross income, wages and social benefits
Source: authors' own computation based on NIS data

We notice from Figure 3 that income inequality measured by the estimated GINI coefficient increased in all cases, as total income, wages and social benefits, in the period under examination. We can also observe that the inequality of wages in absolute values and growth is higher than that of gross income and social benefits. This suggests that wages inequality can be seen as a source of underpinning the household income inequality. The period of 1999 to 2003 the wage inequality has rapidly grown from 0.3 to 0.56. A maximum of social benefits inequality is reached as well in 2003 while a maximum of total income inequality is attained four years later. After 2003 the wages inequality slightly decreased, year by year, until 2012 followed by a period of apparent stagnation. 2018 is a year of leap for all GINI coefficients, followed by two years of slight decrease.

In order to establish a link between the income inequality and labour share in the total income we analyse the correlation between the two variables displayed in the Figure 4. The values of examined variables are distributed on both sides of regression line. The correlation coefficient is 0.87 and the determination coefficient has a value of 0.76. The ANOVA test show a F value of 71.75 (SignF=2.26E-08) for the regression meaning that we can accept that income in equality van be explained in a proportion of 87% by the income labour share, if other factors are remaining constant.

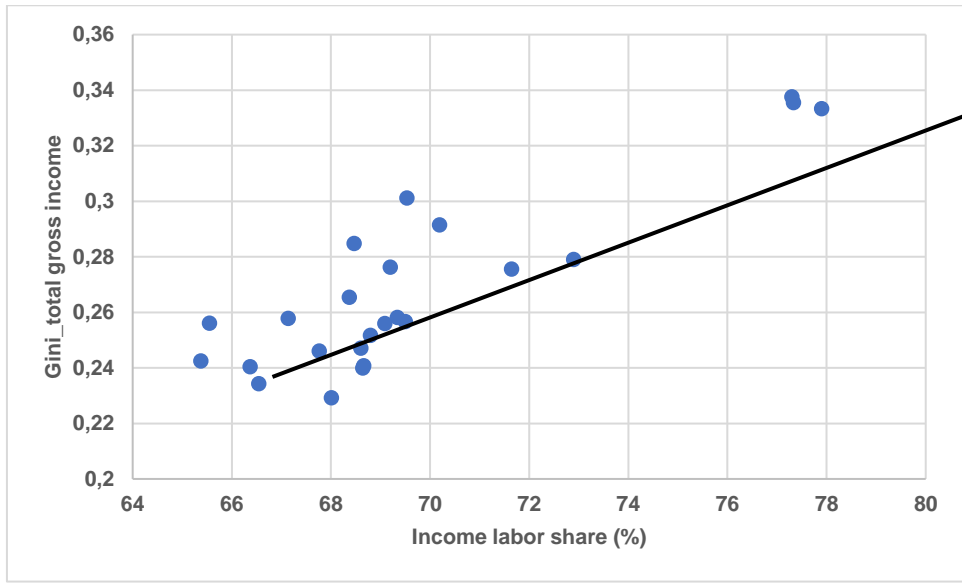


Figure 4 Correlation between inequality of total gross income and labour share on household income

Source: authors' own computation based on NIS data

$$(GINI = -0.21912 + 0.008029 * income\ labour\ share)$$

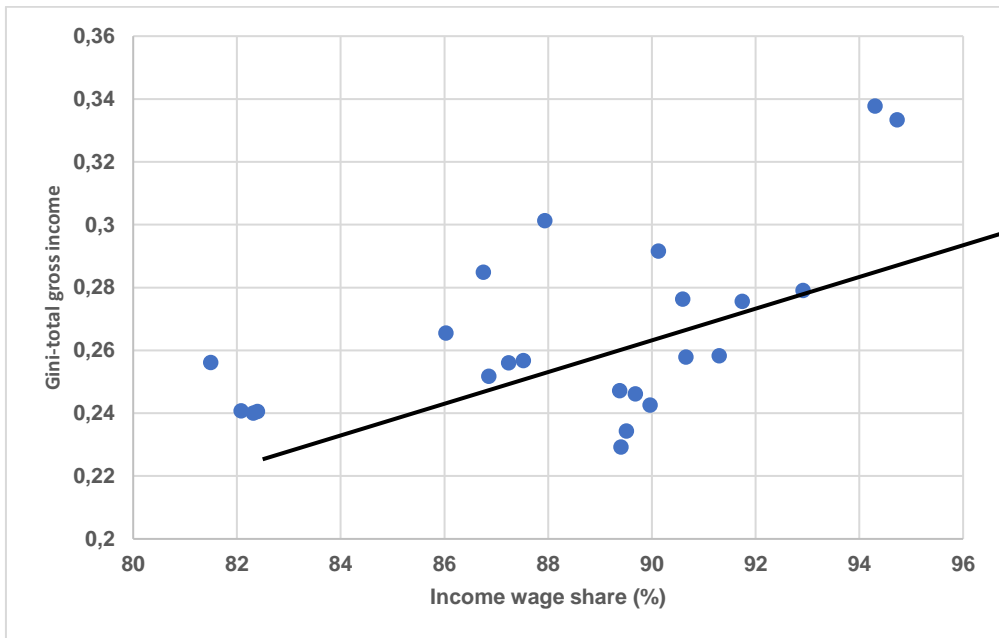


Figure 5 Correlation between inequality of total gross income and wage share on households' income

Source: authors' own computation based on NIS data

$$(GINI = -0.18624 + 0.005121 * income\ wage\ share)$$

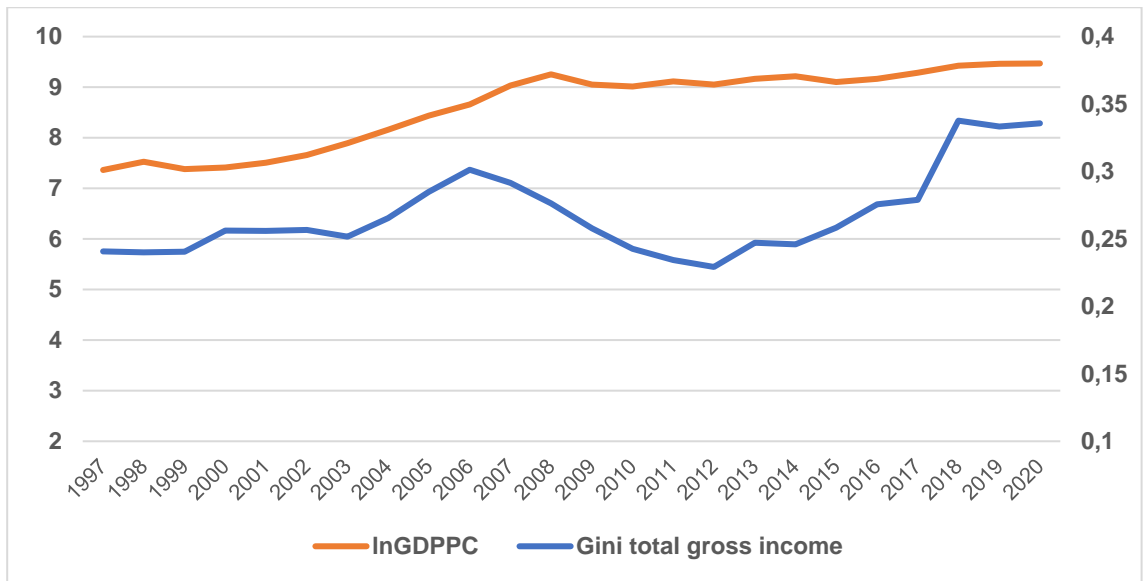


Figure 7 Evolution of GDP per capita and estimated Gini coefficient for households' total gross income
Source: authors' own computation based on World Bank and NIS data

As we can notice from the above graph, the inequality of households' income, expressed by the estimated Gini coefficient, as well as GDP per capita (in ln) have a general positive trend in the examined period of time (Figure 7). GINI coefficient increased from 0.23 to 0.33 and GDP per capita from 1852.5 to 14861.9 thousand US dollars in 2020. Between 1997 and 2005, income inequality evolves together with GDP per capita. In 2006, the Gini coefficient registered a maximum while GDP per capita reached its maximum value two years later, in 2008. After a short period of fall in 2009, GDP per capita continues to increase. The interesting part is the period from 2007 to 2012, when the inequality decreases continuously while GDP per capita is increasing. This is the period of time when economic growth is accompanied by a reduction in income inequality. Another similar period is a short one, 2009-2020. In the examined period of 18 years, we identified only 6+2 years when economic growth is associated with decrease of income inequality, as it is the case of developed economies. This fact suggests a lower capacity of economy to reduce income inequality.

As it is shown in the Figure 8, the correlation between GDP per capita (in ln) and Gini coefficient for total gross income of households is positive (the coefficient of correlation is 0.47) and statistically significant (the value of SignF is 0.0197) for a significance threshold of 5%. 22.33% of variation of we can impute the variation of

Gini coefficient as a consequence of GDP per capita variation, if other factors remain constant.

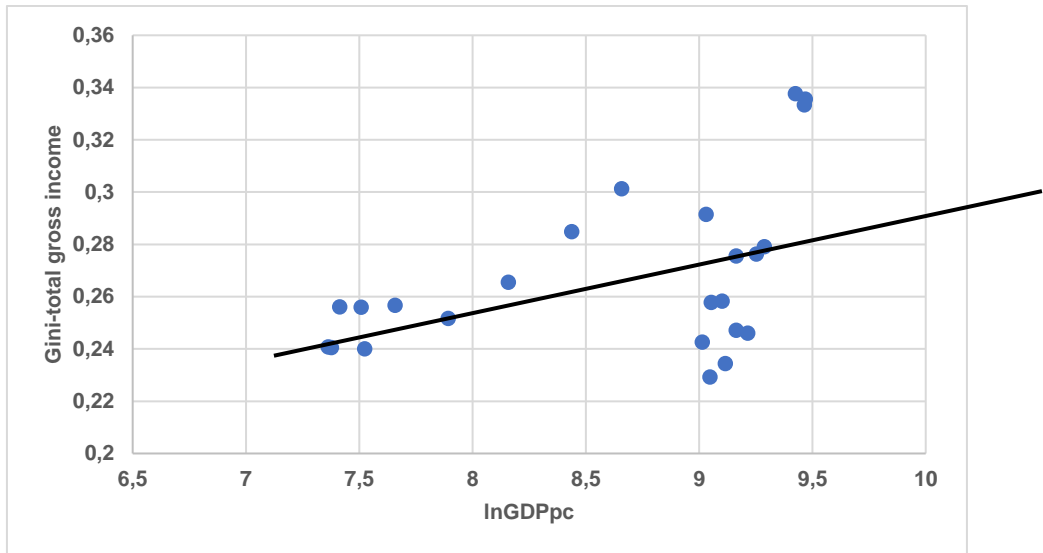


Figure 8 Correlation between GDP per capita and Gini coefficient for households' total gross income

Source: authors' own computation based on World Bank and NIS data

$$(Gini = 0.100836 + 0.01943 * lnGDPpc)$$

We also intend to find the association of labour share income with GDP per capita.

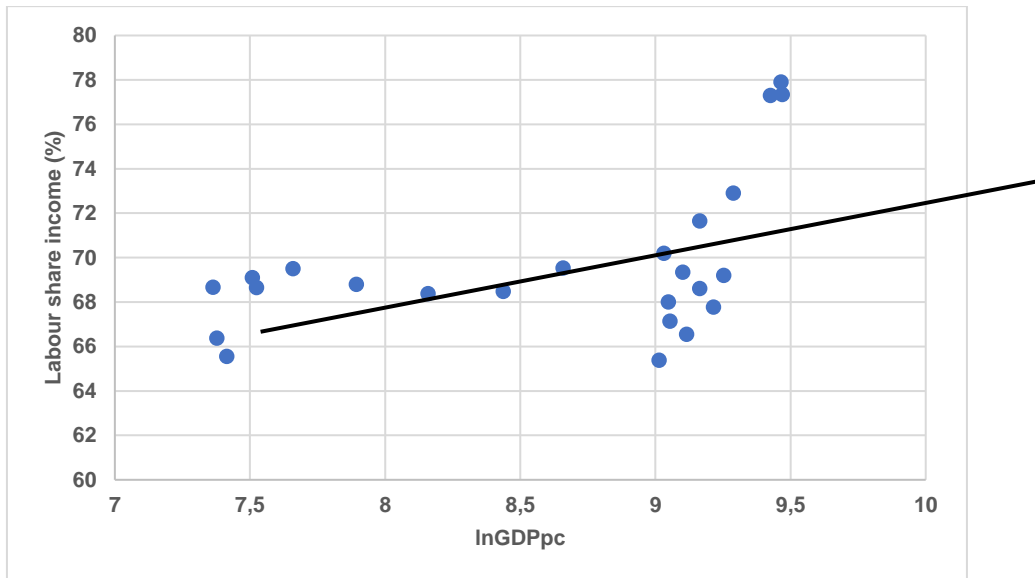


Figure 9 Correlation between GDP per capita and labour share income (%)

Source: authors' own computation based on World Bank and NIS data

$$lnGDPpc = 51.16292 + 2.148621 * labour\ share\ income$$

The coefficient of correlation between the two variable has the value of 0.76. The correlation is validated based on ANOVA test result (the value of SignF is 0.0176). The variation of GDP per capita can be explained in a proportion of 23% by the variation of labour share income (Figure 9).

Finally, we applied the Granger causality test for examined variables. We couldn't identify any causality up to lag equal to 6. Table 1 shows that the following causalities are running: from income labour share to GINI and to lnGDPc and from lnGDppc to GINI.

Table 1 Results of Granger causality test

Null Hypothesis	Obs	F-statistic	Prob.
Lags=6			
Income labour share does not Granger cause Gini	18	7.12855	0.0239
Lags =7			
lnGDppc does not Granger cause Gini	17	2542.00	0.0004
Income labour share does not Granger cause lnGDppc	17	216.652	0.0046

Source: authors' own computation by using EViews 12 software

5. Conclusions and policy implications

We computed the GINI coefficients for total gross income of households and also for income wage, as well as for social benefits, as components of total households' income, for the period of 1997 to 2020.

We found that inequality of wages is much deeper as the inequality of gross income of households and that of social benefits (the values of Gini coefficients are almost doubled) and the wage inequality is linked to the total income inequality as revealed by Francese and Mulas-Granados (2015).

We also found that high shares of labour and wages in household gross income are associated with high income inequality levels and also that they have a linked evolution. Income inequality (of gross income, and its components: wages and social benefits) had an increasing trend in the examined period of time (1997-2020). Overall, this increasing trend in the whole examined period of time suggest an urgency of understanding the processes driving the households' income inequality in Romania.

We revealed a validated causal relationship running from income labour share to households' income inequality (with a lag of 6), based on Granger test results. This suggests that inequality on income labour shares can be seen a source of inequality of total households' income.

We also found that, apart from developed countries, economic growth is generally accompanied with the increase of inequality of households' income. Only in short periods of time (6+2 years) the increase of GDP per capita is associated with the decrease of income inequality, suggesting a low capacity of economy to master the worsening of inequality of households' income. The Granger causality test identifies a causal relationship from GDP per capita to the estimated Gini coefficient of households' income, with a lag of 7 years, suggesting that is however possible a delayed positive impact of economic growth on households' income inequality, in the presence of appropriated policy measures.

Our findings suggest a Based on the above findings, the following policy recommendations can be drawn: (1) appropriate economic and social policy measures are required in order to limit the deepening of households' income inequality; (2) special attention must be given to the labour income due to its significant size in the total income of households, underpinning the total income inequality; (3) specific measure for the labour market are needed in order to reduce wages inequality on the long-term (i.e., improvement of employment structure, promoting participation in the labour market, extension of human capital investment mostly for low-income individuals or groups).

As a limit of the present study, the short time of available data series regarding the income of households can be mentioned.

Possible further directions of research could be to identify and investigate determinants of rising income inequality in Romania (e.g., social, political, institutional factors), as suggested by Wallace et al. (2022).

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Appendix

Estimated GINI coefficients

Year	Gini - total gross income	Gini -wages	Gini -social benefits
1997	0.24076	0.30342	0.08775
1998	0.24081	0.28013	0.08512
1999	0.24048	0.27417	0.09666
2000	0.25613	0.37421	0.10483
2001	0.25614	0.41057	0.13014
2002	0.25671	0.56073	0.16494
2003	0.25173	0.56868	0.18870
2004	0.26547	0.55303	0.13915
2005	0.28488	0.54927	0.13258
2006	0.30128	0.55950	0.13535
2007	0.29154	0.55037	0.12394
2008	0.27632	0.51303	0.12943
2009	0.25785	0.49819	0.13575
2010	0.24260	0.50737	0.13215
2011	0.23434	0.48998	0.14219
2012	0.22925	0.47514	0.12820
2013	0.24718	0.49283	0.14686
2014	0.24608	0.49580	0.14777
2015	0.25828	0.48283	0.14484
2016	0.27559	0.49783	0.16164
2017	0.27908	0.49036	0.16297
2018	0.33770	0.54783	0.21126
2019	0.33337	0.54081	0.22786
2020	0.33560	0.54291	0.21397

Source: authors' own computation based on NIS data