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## **Abstract**

The main objective of this paper is to empirically investigate the impact of income inequality on economic growth and its determinants in transition countries (Albania, Kosovo, Serbia, Hungary, Estonia, Czech Republic, Poland, Russia, and North Macedonia) during the period 2000-2020. This research employs econometric methods, including Ordinary Least Squares (OLS) with robust standard errors, random and fixed effects models, and the Hausman-Taylor model with instrumental variables (IV). The findings from this empirical research highlight two key conclusions: first, that reducing income inequality positively influences economic growth; and second, that subsidies and transfers play a crucial role in decreasing income inequality, which in turn fosters economic growth in transition countries.

**Keywords:** Gini index, economic growth, subsidies and transfers

**JEL:** B41, D63, H20

## 1. Introduction

Recent research investigates the relationship between inequality and economic growth (Aghion et al. 1999; Brueckner and Lederman 2018; Mo 2003; Quintana and Royuela 2014; Bouincha and Karim 2018; Kennedy et al. 2017). However, most of this research claims that inequality has a negative effect on economic growth. Conversely, some researchers suggest that inequality may have positive or ambiguous effects on growth (Forbes 2000; Chen 2003; Barro 2000; Rauch 1993). Barro (2000) analyzes the impact of inequality on economic growth in various contexts and suggests that inequality might have positive effects in the short run by stimulating investments and innovations among individuals and entrepreneurs motivated to improve their positions. Rauch (1993) argues that a moderate level of inequality could contribute to the enhancement of human capital and stimulate investments in education and training, which, in the long run, could lead to faster economic growth.

The present study addresses several key research questions to provide a comprehensive analysis: Does the reduction of income inequality have a positive effect on economic growth in transition countries? Do subsidies and transfers positively influence the reduction of the Gini index in transition economies? By answering these questions, the study seeks to offer insights into how reducing inequality and implementing specific policies like subsidies and transfers can impact economic growth, providing information for policy-making in transition economies. Utilizing econometric methods such as Ordinary Least Squares (OLS) with robust standard errors, random and fixed effects models, and the Hausman-Taylor model with instrumental variables (IV), the research aims to shed light on the dynamics between income inequality and economic growth. The contribution of the paper is that there are only few studies that assess the effect of inequality on economic growth, using Hausman Taylor IV in the transition countries: Albania, Kosovo, Serbia, Hungary, Estonia, Czech Republic, Poland, Russia, and North Macedonia from 2000 to 2022. The data, for this paper, have been collected from World Bank, Standardized World Income Inequality Database (SWIID).

The remaining sections of the study are organized as follows: section 2 reviews relevant literature; section 3 discusses the research methodology and data; section 4 presents the findings and a discussion; and section 5 concludes.

## 2. Literature Review

A considerable body of research examines the intricate relationship between income inequality and economic growth, offering a range of insights and perspectives. Aghion et al. (1999) investigate the dual effects of income inequality on economic growth. They find that while income inequality generally has a negative impact on growth, redistributive policies can enhance economic performance. Additionally, they explore how growth may worsen income disparities among different educational groups. Mdingi and Ho (2021) identify that the relationship between income inequality and economic growth can be positive, negative, or ambiguous, depending on the model employed. Their findings indicate that some models show a positive link, others an ambiguous effect, and a few suggest a negative relationship. Brueckner and Lederman (2018) highlight a differentiated impact of income inequality on growth. Their research reveals that increased income disparity promotes transitional growth in low-income countries, while it significantly impedes growth in high-income countries. They estimate that a one percentage point increase in the Gini coefficient could reduce GDP per capita growth by over one percentage point within a five-year period for the median country, with a long-term impact of approximately -5%. Mo (2003), Quintana (2014) find a substantial negative effect of income inequality on GDP growth rates, particularly in developing countries. They note that while agglomeration processes can spur growth, high levels of inequality can undermine these benefits. Bouincha and Karim (2018) demonstrate a statistically significant negative relationship between economic growth and inequality in developed countries, reinforcing the adverse effects of inequality on growth.

Barro (2000) explores how inequality can both stimulate and hinder economic growth. He references the Kuznets Curve, which suggests that inequality initially rises during early development stages but decreases as economies mature. Supporting this view, Benhabib (2003) shows that growth may initially increase with rising inequality but eventually decline as inequality grows further. Chen (2003) argues that increased inequality can initially boost capital accumulation and efficiency but may later undermine these gains, affected by factors such as human capital, openness, and government consumption. Forbes (2000) finds a robust positive link between rising income inequality and economic growth over the short and medium terms. This association holds across various samples and model specifications. Halter (2014) suggests

that while increased inequality may enhance economic performance in the short run, it generally slows GDP growth over the long term. Kennedy et al. (2017) find that inequality has a negative impact on growth over time, consistent with research in the US and Europe. They propose that enhancing human capital could help mitigate this negative impact. Jakob et al. (2018) shows that inequality has a negative effect on growth at lower to moderate levels of financial development, but this effect becomes negligible at higher levels. Piketty (2014) examines the relationship between labor and capital inequality, finding weak or negative correlations in societies with high capital inequality. Wolff and Zacharias (2009) support this by indicating that income from capital often exceeds income from labor.

Stiglitz (2012) analyzes the complex dynamics between inequality and economic outcomes, arguing that income redistribution might be perceived as an unnecessary expense. He also discusses the impact of the 2008 financial crisis on the housing market. Kuhof and Rangiere (2010) highlight that rising inequality exacerbates financial instability by reducing middle-class purchasing power and increasing debt propensity, while wealthy individuals and banks exploit financial systems for profit. Piketty (2014) explores the relationship between labor inequality and capital inequality, finding that the two are often weakly correlated or even negatively correlated in societies where capital inequality is pronounced, allowing capital owners to avoid working. When measuring income inequality, capital inequality consistently proves to be more severe than labor inequality. Empirical analysis shows that in societies with relatively low labor income inequality, the top 10% of earners receive about 25% of labor income, the bottom 50% or working class receive around 30%, and the middle 40% receive about 45%. The Gini coefficient for such societies is 0.26. In contrast, in societies with significant capital ownership inequality, the wealthiest 10% control about 60% of wealth, the bottom 50% own roughly 5%, and the middle 40% hold about 35%. The Gini coefficient in these societies is 0.67. This indicates that inequality remains substantial even in theoretical ideal societies.

### **3. Research Methodology and Data**

The estimated empirical model is analyzed in order to investigate the relationship between Gini index on economic growth in European transition countries. Since the best estimator could be provided by Hausman Taylor IV, we choose to use this approach in our research. Lambert and

Decoster (2005) discuss in detail the dimensions and applications of the Gini coefficient, one of the most popular and often-used measures of inequality. Ao (2009) explains that the Hausman-Taylor (1981) model employs a mixed approach to address the need for including time-invariant variables and accounting for unobserved individual differences. This approach combines aspects of both fixed and random effects, offering a hybrid solution.

In this section, we examine how other variables influence the Gini coefficient, while below we present GDP as the dependent variable, with the other variables being independent. Below is the Hausman-Taylor empirical model specification:

$$Y_{it} = c + \beta_1(Y_{it} - 1) + \beta_2(Growth\_Rate_{it}) + \beta_3(Sub\_Tr.\_it) + \beta_4(Gov\_Expit) + \beta_5(Corrupti\_Indexit) + \beta_6(Consump\_coefit) + \beta_7(Public\_Revit) + uit$$

The dependent variable, denoted as  $Y_{it}$ , is the Gini coefficient for each county  $i$  and  $t$  represent the years,  $c$  is the constant term. The explanatory variables include GDP per capita, subsidies and transfers, government spending, public revenues, consumption expenditure, and the corruption index, while  $uit$  represents exogenous disturbances. The second model, with GDP as the dependent variable, follows the Hausman-Taylor empirical model specification:

$$Y_{it} = c + \beta_1(Y_{it} - 1) + \beta_2(Gini\_index\ it) + \beta_3(Sub\_Tr.\_it) + \beta_4(Gov\_Expit) + \beta_5(Corrupti\_Indexit) + \beta_6(Consump\_coefit) + \beta_7(Public\_Revit) + uit$$

The dependent variable, denoted as  $Y_{it}$ , is GDP per capita. The explanatory variables include the Gini coefficient, subsidies and transfers, government spending, public revenues, consumption expenditure, and the corruption index.

The variables that are part of the empirical model's statistical data are described by the descriptive statistics. The public revenues, government expenditures, consumption expenditure, subsidies and transfers, GDP per capita, and the corruption index are the independent variables, whereas the GINI index is the dependent variable. The sample consists of 90 observations, and table I displays the mean, standard deviation, minimum and maximum values.

**Table:1 Summary statistics**

| <b>Variable</b> | <b>Observations</b> | <b>Mean</b> | <b>SD</b> | <b>Min</b> | <b>Max</b> |
|-----------------|---------------------|-------------|-----------|------------|------------|
| Gini            | 90                  | 32.35778    | 5.303868  | 26         | 44.1       |
| Cons            | 90                  | 64.75813    | 14.12746  | 46.3269    | 90.46334   |
| GovExp          | 90                  | 17.85189    | 2.932144  | 10.13493   | 22.45116   |
| PublicR         | 90                  | 21.59096    | 7.436287  | 10.94278   | 42.85      |
| SubTRans        | 90                  | 51.73235    | 15.32375  | 19.55294   | 76.66972   |
| TotalExp        | 90                  | 33.43062    | 6.395292  | 18.91544   | 46.75614   |
| GDPgrowth       | 90                  | 2.581111    | 3.712447  | -14.7      | 10.3       |

*Source: Author's calculation*

#### **4. Empirical Results**

Table 2 employs a variety of econometric approaches in European countries in transition (Albania, Kosovo, Serbia, Hungary, Estonia, Czech Republic, Poland, Russia, and North Macedonia).

Our analysis concludes that an increase in subsidies will lead to a 0.13% decrease in the Gini coefficient c.p.. Given that the standard error of this coefficient is less than 0.05, the result is statistically significant. This confirms that increasing subsidies and transfers in transition countries has a direct and statistically significant effect on reducing inequality. Furthermore, economic growth is another variable in our econometric model. The regression analysis indicates that a 1% increase in GDP results in a 0.15% decrease in the Gini coefficient, holding other factors constant. This result is also statistically significant, suggesting that economic growth plays a direct role in reducing inequality. Lastly, the reduction of inequality also positively impacts economic growth. This dual effect of inequality reduction and economic growth highlights the importance of policies that address inequality as a strategy for promoting sustainable economic development.

**Table 2: Results of regression analysis**

| Variables       | OLS                    | Fixed effects         | Random effects        | HausmanTaylor-IV      |
|-----------------|------------------------|-----------------------|-----------------------|-----------------------|
| gini_coef       |                        |                       |                       | -.1856211**<br>0.017  |
| fconsmp_coef    | -.1441836<br>0.503     | -.4155313 **<br>0.019 | -.422484**<br>0.013   | -.3877691**<br>0.021  |
| gov_expendgdp   | -2.108303***<br>0.000  | .2298482<br>0.412     | .16047<br>0.556       | .1793724<br>0.513     |
| subs_and_transf | -.1963023<br>0.102     | -.1172821 **<br>0.038 | -.1184476 **<br>0.031 | -.1340512**<br>0.015  |
| growth_rate     | -.4187307<br>0.168     | -.1377778 **<br>0.040 | -.148437 **<br>0.022  | -.1549144**<br>0.019  |
| corrup_index    | -.3310938 ***<br>0.004 | -.0844119 **<br>0.045 | -.0879617 **<br>0.030 | -.0803462**<br>0.048  |
| public_revvgdp  | -.0155794<br>0.952     | -.4879105***<br>0.009 | -.4567091 **<br>0.015 | -.4031934***<br>0.009 |
| _cons           | 131.7857               | 93.62611              | 95.54142              | 114.8435              |
| Observations    | 86                     | 86                    | 86                    | 86                    |
| R-Squared       | 0.5209                 |                       |                       |                       |
| F               | 14.32                  | 4.68                  |                       |                       |
| Chi2            | N/A                    | N/A                   | 28.81                 | 45.02                 |
| Model           | OLS                    | FE                    | RE                    | HT-IV                 |

Note that the symbols \*, \*\*, and \*\*\* signify significance at 10%, 5% and 1% respectively.

Source: Author's calculations

Based on the results of our models, we found that an increase in the Gini index is associated with a 0.513 percent decrease in economic growth. This confirms the hypothesis that reducing inequality has a positive effect on economic growth, indicating that any increase in inequality negatively impacts GDP. Furthermore, our analysis of subsidies and transfers reveals that an increase in these variables results in a 0.189 percent decrease in economic growth, ceteris paribus. It is important to note that subsidies and transfers encompass various forms of social assistance, such as free healthcare, income support for individuals without sufficient means, social protection for the elderly and children, scholarships, and other public expenditures dedicated to social transfers and subsidies. In examining the impact of subsidies on economic



growth in transition countries including Albania, Kosovo, Serbia, Hungary, Estonia, Czech Republic, Poland, Russia, and North Macedonia, several concrete analyses illustrate how subsidies have influenced economic performance.

**Table 3: Results of regression analysis**

| Variables       | OLS                   | Fixed effects         | Random effects        | HausmanTaylor-IV      |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Growth_rate     |                       |                       |                       | -.324184<br>0.003***  |
| fconsmp_coef    | .10001<br>0.206       | .0271279<br>0.932     | .10001<br>0.203       | .0367128<br>0.872     |
| gov_expendgdp   | -.5721311***<br>0.001 | -1.802646***<br>0.000 | -.5721311***<br>0.001 | -1.425911***<br>0.000 |
| subs_and_transf | -.0480723<br>0.280    | -.1460599<br>0.143    | -.0480723<br>0.277    | -.1898642**<br>0.034  |
| Gini_coef       | -.0570707<br>0.168    | -.4221238**<br>0.040  | -.0570707<br>0.164    | -.5134185***<br>0.001 |
| corrup_index    | .0136851<br>0.756     | -.1732761**<br>0.018  | .0136851<br>0.756     | -.1452039**<br>0.018  |
| public_revdp    | -.1089799<br>0.252    | -.0793218<br>0.813    | -.1089799<br>0.248    | -.1692095<br>0.408    |
| _cons           | 17.33255              | 77.39312              | 17.33255              | 85.05302              |
| Observations    | 86                    | 86                    | 86                    | 86                    |
| R-Squared       | 0.1558                |                       |                       |                       |
| F               | 2.43                  | 8.37                  |                       |                       |
| Chi2            | N/A                   | N/A                   | 14.58                 | 47.43                 |
| Model           | OLS                   | FE                    | RE                    | HT-IV                 |

Note that the symbols \*, \*\*, and \*\*\* signify significance at 10%, 5% and 1% respectively.

Source: Author's calculations

## 5. Conclusion

This research provides a comprehensive understanding of the relationship between subsidies, economic growth, and economic inequality. Our findings indicate that increasing subsidies and transfers significantly reduces inequality in transition countries. Additionally, the analysis shows that economic growth directly contributes to reducing inequality. Our study supports the

hypothesis that reducing inequality has a positive effect on economic growth, aligning with established observations that inequality can hinder economic progress. Furthermore, the impact of subsidies and transfers on economic growth illustrates the complexity of their role in economic development. While intended to support specific sectors, these subsidies can sometimes lead to unintended negative effects, such as inefficiencies and reduced sectoral growth. In examining various transition countries, the research reveals that subsidies, particularly in agriculture and energy, have had mixed outcomes. For instance, subsidies in the agricultural sector have sometimes led to inefficiencies, while energy subsidies have affected investment and consumption patterns. These effects highlight the need for a balanced and strategic approach to subsidy policies. Overall, the contribution of this paper lies in its empirical analysis of how subsidies and economic growth intersect with inequality. It underscores the importance of designing targeted policies that address economic disparities while promoting sustainable economic development. The insights provided can assist policymakers in transition countries in crafting strategies that balance economic support with the need for effective resource allocation and long-term growth.

## References

- Aghion, P; Caroli, E.; Penalosa, C. (1999), Inequality and economic growth: the perspective of the New Growth Theories, *Journal of Economic Literature* 37(4), 1615-1660.
- Ao, X. (2009), An introduction to Hausman-Taylor model, Harvard Business School.
- Barro, R. (2000), Inequality and growth in a panel of countries, *Journal of Economic Growth* 5, 5-32.
- Benhabib, J. (2003), The tradeoff between inequality and growth, *Annals of Economics and Finance* 4(2), 491–507.
- Bouincha, M.; Karim, M. (2018), Income inequality and economic growth: An analysis using a panel data, *International Journal of Economics and Finance* 10(5), 1916-9728, doi:10.5539/IJEF.V10N5P242.
- Brueckner, M.; Lederman, M. (2018), Inequality and economic growth: The role of initial income, *Journal Economic Growth* 23(3), 341-366.

- Castells-Quintana, D; Royuela, V. (2014), Agglomeration, inequality and economic growth, *Annals of Regional Science* 52(2), 343-366.
- Chen, B. (2003), An inverted-U relationship between inequality and long-run growth, *Economics Letters* 78(2), 205-212.
- Forbes, K. (2000), A reassessment of the relationship between inequality and growth, *American Economic Review* 90(4), 869–887.
- Halter, D.; Oechslin, M.; Zweimüller, J. (2014), Inequality and growth: The neglected time dimension, *Journal of Economic Growth* 19(1), 81–104.
- Jakob, M.; Md. Rabiul, I.; Hristos, D. (2018), Inequality, financial development and economic growth in the OECD, 1870–2011, *European Economic Review*, 101(C), 605-624.
- Kennedy, T.; Smyth, R.; Chen, G. (2017), Does income inequality hinder economic growth? New evidence using Australian taxation statistics, *Economic Modelling*, 65, 119-128.
- Kumhof, M.; Rancière, R. (2010), Inequality, leverage and crises, IMF , WP/10/268.
- Lambert, P.; Decoster, A. (2005), The gini coefficient reveals more, SSRN, doi:10.2139/ssrn.809004.
- Mdingi, K.; Ho, S. (2021), Literature review on income inequality and economic growth, *MethodsX* 8(101402), doi: 10.1016/j.mex.2021.101402.
- Mo, P. (2003), Income inequality and economic growth, *Kyklos* 53(3), 293-315, doi:10.1111/1467-6435.00122.
- Piketty, Th. (2014), *Capital in the twenty-first century*, Cambridge and London: Harvard University Press
- Stiglitz, J. (2012), *The price of inequality*, London: Allen Lane.
- Wolff, E.; Zacharias, A. (2009), Household wealth and the measurement of economic well-being in the United States, *The Journal of Economic Inequality*, 7(2), 83-115.

*Description of variable*

| Nr. | Variables   | Details  | Code            |
|-----|---|--|-----------------|
| 1   | Government expenditures   | Government expenditures expressed in % GDP     | gov_expendgdp   |
| 2   | Corruption  | Index of institutional factors (corruption)    | corrup_index    |
| 3   | Public revenue  | Public revenue expressed in % GDP              | public_rev_gdp  |
| 4   | Subsidies and Transfers   | Subsidies and other transfers as % of expenses | subs_and_transf |
| 5   | Gini Coefficient<br>Coefficient that measures Inequality<br>gini_coef | Coefficient that measures Inequality           | gini_coef       |
| 6   | Economic growth   | Economic growth,<br>GDP per capita growth_rate | growth_rate     |
| 7   | Consumer price index  | Final consumption                              | fconsmp_coef    |

Appendix: Countries

| No. | Transition Countries |
|-----|----------------------|
| 1   | Albania              |
| 2   | Kosovo               |
| 3   | Serbia               |
| 4   | Macedonia, FYR       |
| 5   | Hungary              |
| 6   | Russian F.           |
| 7   | Czech Republic       |
| 8   | Poland               |
| 9   | Estonia              |