

Jianu, Ionut; Tudorache, Maria-Daniela; Simion, Constantin-Stefan

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Assessing the Impact of Institutions on Social Development

Ionuț JIANU*

Bucharest University of Economic Studies, Bucharest, Romania

**Corresponding author, ionut.jianu@economie.ase.ro*

Maria-Daniela TUDORACHE

Bucharest University of Economic Studies, Bucharest, Romania

daniela.tudorache@economie.ase.ro

Constantin-Ștefan SIMION

Bucharest University of Economic Studies, Bucharest, Romania

simionconstantin21@stud.ase.ro

Abstract. *This paper examines the impact of institutions on income inequality in 27 European Union member states over the period 2011-2022, using the method Panel Estimated Generalized Least Squares. To catch the quality of institutions we used World Governance Indicators published by World Bank, especially those related to rule of law and political stability and absence of violence/terrorism. The results confirmed a negative relationship between institutional quality (rule of law, political stability and absence of violence/terrorism) and income inequality, indicating that the quality of the rules driving human action really matter and influences the dynamic of social development. In addition, we used additional variables to improve the quality of the model, by using variables related to labour market, education and household sectors. In this respect, we found a positive association between income inequality and other explanatory factors, such as school dropout, unemployment rate and the housing cost overburden rate. Even if the model is limited to five income inequality drivers, we have demonstrated that the calculated coefficients are not affected by multicollinearity or other model issues. In this respect, the estimation provides high confidence results, which can be fully taken into consideration by governments, when drafting policy measures oriented to tackle income inequality.*

Keywords: income inequality, rule of law, political stability, institutions, early leavers

Introduction

Income inequality is a significant social challenge with far-reaching negative effects worldwide, and stands as one of the most profound and pressing challenges of these times, influencing not only economic performance but also social cohesion and political stability. In both developed and emerging economies, persistent disparities in income distribution have been linked to diminished economic resilience, reduced social mobility, and even political unrest. In the European Union, where a commitment to social inclusion and sustainable growth is a fundamental policy goal, the dynamics of income inequality have garnered considerable attention among researchers and policymakers alike. This issue remains a highly debated topic, as EU authorities are committed to fostering social inclusion through various programs and initiatives. It worths to be mentioned that high income inequality reduces economic resilience, which leads to unsustainable economic growth, especially if inequality is determined by political actions/institutions or if it is a consequence of the justice system. However, income inequality can also have positive effects, especially if it is a result of individual efforts and human engagement in economic activities.

The motivation for focusing on this theme consists in the increased concerns of EU population regarding the dynamics of income inequality, but also in the need to explore the role of institutions in driving income inequality level, which is an important proxy for social development. Institutions reflect the formal and informal rules that influence the human actions in society (North, 1989), and according to Acemoglu and Robinson (2012), these are among the key factors explaining the development gap between countries. In this case, it should be mentioned that states need a strong institutional infrastructure to ensure welfare and economic growth (Acemoglu et al., 2001; Rodrik, 2008; Acemoglu, 2012).

The general objective of this paper is to estimate the effects of institutions on income inequality, an objective that will be achieved through the following specific objectives: (i) estimating the effects of institutions (rule of law / political stability and absence of violence/terrorism) on income inequality; (ii) estimating the effects of other income inequality explanatory factors (unemployment, early leavers rate and housing cost overburden rate; (iii) performing the necessary tests to validate the accuracy of the estimators.

To achieve the mentioned objectives, we have structured our paper as follows: (a) literature review, where we present the main literature findings in this field; (b) methodology, where we describe the methods used to ensure the proper achievement of the papers' objective; (c) results and discussions, where we show and interpret the obtained results; (d) conclusion, where we draw the main conclusions.

Literature review

A growing body of literature underscores the centrality of institutions in shaping economic outcomes. Institutions, defined as the formal and informal rules that govern human interaction (North, 1989) play a critical role in mediating the distribution of economic resources and opportunities. Seminal works by Acemoglu and Robinson (2012) argue that the quality of these institutions is a key determinant of national prosperity, influencing not only growth rates but also the equitable distribution of income. High-quality institutions, which feature effective rule of law, political stability, and the absence of violence or terrorism, are thought to foster an environment in which resources are allocated more fairly and economic opportunities are broadly distributed. Income inequality is one of the most significant challenges across the world, causing economic imbalances at the global level. In this case, it should be noted that the income inequality is directly related to the early leavers and the poverty rate. Therefore, authors such as Glyn (1995), Helpman et al. (2010), Mayer (2010), Jianu (2018), Jianu (2020), Jianu et al. (2021), Fauzan et al. (2023), Jianu et al. (2024) have confirmed this relationship.

Low-income families have limited access to education, especially high-quality education, due to the high education costs (for example, people living in rural areas cannot afford to send their children to study at high schools or universities in big cities due to the high costs of accommodation, education fees, books), which discourages young people from continuing their studies. As a consequence of low participation in higher education, young people will often face difficulties in accessing the labour market, which increases unemployment among the population.

Moreover, housing is becoming increasingly unaffordable for middle-income and low-income households (Anacker, 2019; Galster and Lee, 2021; OECD, 2021, Lee et al., 2022), and high housing costs can be overburdening for low-income families.

Regarding the impact of institutions on income inequality, Chong and Caldéron (2000) indicates that institutions are a key factor that improve the social inclusion, taking into account that

high quality institutions reduce the power concentration and distribute it more equally into the society, thus reducing poverty and income inequality. Institutional indicators such as government stability, democracy, accountability, and bureaucratic quality can affect income distribution, which increase the need for improving the efficiency of government policies (Uzar, 2021). In addition, Jianu et al. (2019) found that income inequality is more persistent, more reactive to its historical evolutions, and more difficult to be tackled in countries with extractive institutions. Income inequality, characterized by its persistent nature, dynamic response to historical legacies, and heightened resilience in environments governed by extractive institutions, represents a multifaceted challenge. In societies where institutional frameworks are designed to concentrate power and resources rather than distribute them equitably, the disparities in income not only endure over time but also intensify in response to past economic, political, and social trajectories.

An important institutional factor that should be considered is political stability, given that it contributes to the increase in investments, which provides new opportunities for society, but it also boosts the citizen confidence. To this respect, several authors confirmed the negative relationship between political stability and income inequality (Alesina and Perotti, 1996; Perotti, 1996; Tavares and Wacziarg, 2001; Acemoglu et al., 2008; Aisen and Veiga, 2011). In addition, Jannils (2024) used the panel technique using 16 indicators that capture political instability in 133 countries, and demonstrated that political instability contributed significantly to income inequality during the period 1984-2019.

With a view to the relationship between income inequality and the rule of law, several researchers (Vieira, 2007; Bhagat, 2020; Barriola et al., 2022; Bozik, 2024) have found a negative association. Therefore, states that demonstrate stronger adherence to the rule of law tend to exhibit lower levels of income inequality, a trait predominantly observed in states with a higher GDP per capita.

To measure the effect of rule of law on income inequality, Kpognon (2020) combined data from the World Bank's Doing Business index, the World Bank's global governance indicators, the economic freedom indices developed by the Fraser Institute and the Heritage Foundation, along with the Gini coefficient, to build a panel composed of developed and developing countries, finding an inverse relationship between rule of law and income inequality. In addition, Bozik (2024) demonstrated that government constraints, the absence of corruption, open government and fundamental rights are associated with a low rate of income inequality.

Methodology

This section presents the data and methodology used to assess the impact of institutions on income inequality. To this end, we used Eurostat and World Bank data for all EU Member States, covering the period 2011-2022.

The estimation have been performed using Panel Estimated Generalized Least Squares method, this method being set in line with the results of the stationarity tests applied (1 - tests corresponding to a common unit root process: Levin, Lin & Chu t^* , Breitung t -stat; 2 - tests corresponding to an individual unit root process: Im, Pesaran and Shin W -stat, ADF-Fisher Chi-square, and PP-Fisher Chi-square). Taking into account that the number of observations per cross-section (12) is lower than the cross-sections included in the assessment (27) and to avoid heteroskedasticity we also applied Period SUR option (when number of observations per cross-section is higher than the number of cross-sections, Cross-section SUR should be applied) on the following Panel EGLS equation:

$$inc_quintile_{it} = \alpha_0 + \alpha_1 early_leavers_{it} + \alpha_2 unempl_{it} + \alpha_3 pol_stab_{it} + \alpha_4 hh_cost_overburden_{it} + \alpha_5 rule_of_law_{it} + \varepsilon_t \quad (1)$$

where:

t represents the year, i is the country name, $\alpha_0, \dots, \alpha_5$ are the coefficients of the explanatory variables, ε_t is the error term, $inc_quintile$ reflects the income quintile share ratio (S80/S20 - a higher S80/S20 ratio indicating greater income inequality because it shows that the top earners control a much larger proportion of the income compared to the bottom earners; conversely, a lower ratio suggests a more equitable income distribution), $early_leavers$ catches the rate of people aged between 18-24 years who dropped out from education and training, $unempl$ is the unemployment rate among the population aged between 15-74 years, pol_stab is the the index of political stability and absence of violence / terrorism, $hh_cost_overburden$ represents the percentage of individuals living in a household where housing costs represents at least 40% of total household cost and $rule_of_law$ is the rule of law index.

We have obtained a balanced panel with a total of 324 observations including 12 periods of time (annually) ranging from 2011 to 2022 within the 27 countries of EU.

Further, we checked the verosimilarity of the model by testing the significance of the coefficients, the statistical validity of the model (Fisher test – a model is statistically valid if $p < 0.05$), the extent to which the dependent variable dynamic is explained by the evolution of the explanatory variables (R-squared), but also other important hypotheses such as: (i) normal distribution of the residuals using Jarque-Bera test – normal distribution is confirmed if the Jarque-Bera Null Hypothesis is accepted ($p > 0.05$ and Skewness – Kurtosis statistics are close to 0 and 3 values); (ii) autocorrelation of the residuals using Durbin-Watson test – the DW stat should be higher or equal with DU statistics, but lower than 4-DU or equal with it; (iii) cross-sectional dependence using Breusch-Pagan and Pesaran CD tests – probabilities should be higher than 0.05; (iv) multicollinearity using Variance Inflation Factors test – centered VIF coefficients should be lower than 4.

Results and discussions

In this section, we present the main results obtained following the application of the corresponding methodology. First, we analyzed the income quintile share ratio between last Fifth quintile and the first one (*Figure 1*). The data shows a high income inequality level in Romania, Latvia, Lithuania and Bulgaria (where the percentage of the income obtained by this group in the national income is 6 to 7 times higher than the percentage corresponding to the first quintile), while the lowest levels are found in Slovakia, Slovenia, Czech Republic and Belgium.

Next, we present the main results of the econometric methods used. The results of the stationarity tests applied (*Table 1*) indicate that all variables are stationary at level, which recommends applying a standard Least Squares regression. In this respect, we continued by applying the Panel EGLS method on the equation presented in the methodology.

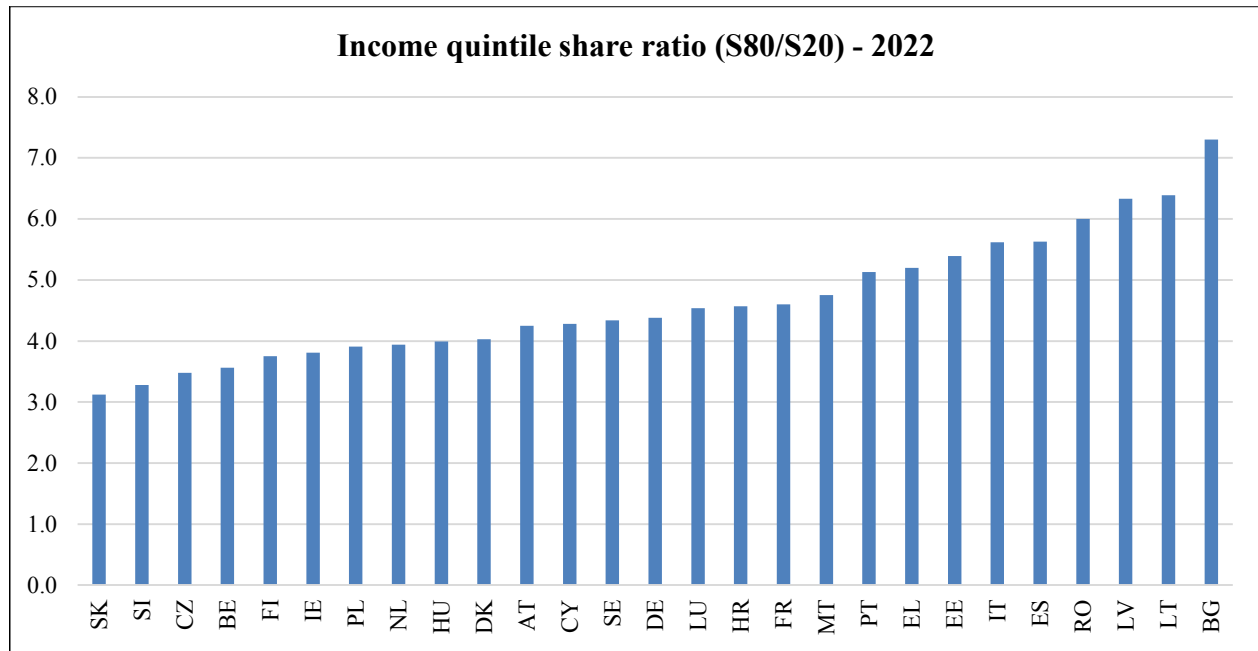


Figure 1. Income inequality in European Union (2022)

Source: Own calculations using Microsoft Office Excel, Eurostat data.

Table 1. Stationarity of the data

Stationarity (lag length information criterion)	Variable	Number of tests confirming stationarity at I(0)
Schwarz / Akaike	inc_quintile	7 of 12
	early_leavers	8 of 12
	unempl	8 of 12
	pol_stab	8 of 12
	hh_cost_overburden	8 of 12
	rule_of_law	7 of 12

Source: Own calculations using Eviews 12.0.

According to the results obtained (*Table 2*), we found that an increase in the early leavers rate by 1pp determined a hike in the income quintile ratio (S80/S20) by 0.058pp at EU level in the analyzed period, while the impact of unemployment on the dependent variable is just slightly lower (0.041pp).

With a view to the political stability and absence of violence / terrorism, we found that an increase by 1 deviation point in its level led to a drop of 0.011 in the income quintile ratio. To this end, the results confirmed an inverse relationship between political stability / national safety and income inequality.

The results also indicate that an increase of 1pp in the percentage of individuals living in a household where housing costs represent at least 40% of total household cost have led to a rise in the income quintile ratio (S80/S20) by 0.019pp. Moreover, we found a negative association between rule of law and income inequality, an increase of 1 deviation point in the rule of law index leading to a fall in the income quintile ratio by 0.024pp. This highlights the significant role of impartial and effective justice systems in enhancing social development.

All coefficients obtained are significant at 1% and the standard errors corresponding to each estimated impact are quite low, which increases the confidence in the estimators. In addition, the model is valid from a statistical point of view (Fisher test prob. < 0.05), while the R-squared value shows that 45.99% of the income quintile (S80/S20) evolution is explained by the developments in the selected independent variables, this indicating a good choice of the explanatory factors, also leaving space for submitting other variables that could add value for future researches.

Table 2. Results of the model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EARLY_LEAVERS	0.058827	0.009058	6.434758	0.0000
UNEMPL	0.041732	0.007293	5.721892	0.0000
POL_STAB	-0.011531	0.002296	-5.021114	0.0000
HH_COST_OVERBURDEN	0.019850	0.006002	3.307375	0.0010
RULE_OF_LAW	-0.024436	0.004755	-5.138482	0.0000
C	6.458285	0.434523	14.86292	0.0000
Weighted statistics				
R-squared: 0.459997		Mean dependent var: 0.910428		
Adjusted R-squared: 0.451506		S.D. dependent var: 3.346404		
S.E. of regression: 0.976727		Sum squared resid: 303.3706		
F-statistics: 54.17711		D.W. stat: 1.995105		
Prob(F-statistic): 0.000000				

Source: Own calculations using Eviews 12.0.

Regarding the residuals, the Jarque-Bera test (*Figure 2*) indicates the residuals are normally distributed, since the JB probability (16.93%) is higher than 5% and Skewness (0.25) - Kurtosis (3.01) values are close to 0 and 3. Moreover, the Durbin Watson stat (1.995) confirmed that the residuals are not autocorrelated, while the results of the cross-section dependence tests (*Table 3*) confirmed the null hypothesis, stating that there is no dependence between cross-sections. In this respect, it worth to be mentioned that all performed three tests (Breusch-Pagan LM, Pesaran scaled LM and Pesaran CD) confirmed the null hypothesis ($p > 0.05$).

Finally, we checked the multicollinearity by using Variance Inflation Factors test, which confirmed its absence, since all centered VIF coefficients are lower than 4. Taking into consideration all performed tests, we confirmed that the obtained coefficients are not distorted, not being affected of multicollinearity or other model issues.

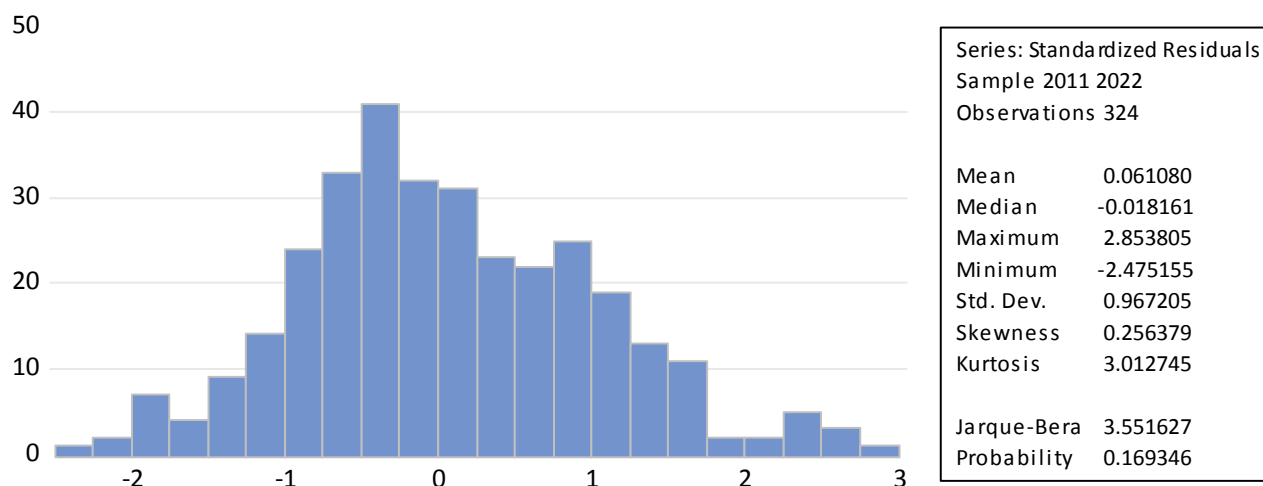


Figure 2. Distribution of the residuals

Source: Own calculations using Eviews 12.0.

Table 3. Results of the cross-section dependence tests

Cross-section dependence tests	Prob.
Breusch-Pagan LM	0.8117
Pesaran scaled LM	0.3742
Pesaran CD	0.1106

Source: Own calculations using Eviews 12.0.

Conclusion

Our paper provides robust empirical evidence that institutional quality, particularly measured by indicators of rule of law and political stability (including the absence of violence and terrorism), exerts a significant mitigating influence on income inequality within the European Union. The negative relationship identified in our analysis underscores that effective institutions not only promote equitable resource distribution but also contribute to a more resilient and inclusive social framework. Although the direct quantitative impact of institutional quality may appear less pronounced relative to other socio-economic determinants, its role is multifaceted, influencing and interacting with various aspects of social development.

Specifically, our results indicate that adverse labor market conditions, as evidenced by higher unemployment rates and elevated early school leaving figures, are strongly associated with an increase in the income quintile share ratio (S80/S20). This finding reinforces the critical importance of good education systems and active labor market policies in reducing income disparities. Moreover, the observed positive correlation between the housing cost overburden rate and income inequality highlights the growing challenge of housing affordability, a factor that exacerbates financial pressures on lower-income households and further widens socio-economic gaps.

While our panel EGLS approach delivers statistically sound and policy-relevant insights for the EU as a collective entity, the study does bear certain limitations. The aggregation of data at the EU level may not reveal significant intra-regional heterogeneity, suggesting that country-specific analyses could yield more nuanced findings. Future research could address this by applying

alternative econometric frameworks, such as the PMG/ARDL model, to allow for dynamic adjustment processes at the national level, provided that data stationarity conditions can be met.

In summary, the findings of this paper not only validate the theoretical proposition that high-quality institutions are central to mitigating income inequality but also illuminate the intertwined roles of education, employment, and housing in shaping equitable economic outcomes. These insights provide a valuable foundation for policymakers, suggesting that efforts to improve institutional quality should be integrated with broader socio-economic reforms aimed at enhancing social inclusion and sustainable development.

This paper confirms the negative relationship between institutions (rule of law and political stability and absence of violence / terrorism) and income inequality. Even if the direct impact seems to be lower than the other calculated effects, it should be taken into account that the quality of institutions also interacts with other forms of development which influences social indicators. This also highlights the need to fully consider institutional quality challenges when drafting government measures designated to tackle income inequality.

We also found a positive relationship between unemployment / early leavers rate and income quintile ratio (S80/S20), proving that labour market and educational systems remain key factors explaining the income discrepancies. Finally, we confirmed that increased housing costs are an important factor exercising pressures on income inequality. The limits of our study are related to the fact that the calculated coefficients are relevant for EU as a whole, not when referring to individual Member States. Applying a PMG/ARDL model in our further research may address this issue by allowing to interpret the results at country level. However, the data used in this research are stationarity at level and using a PMG/ARDL model was not a solution.

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