European Journal of Sustainable Development (2025), **14**, 4, 157-165 ISSN: 2239-5938
Doi: 10.14207/ejsd.2025.v14n4p157

The impact of institutions on income inequality in the EU Member States

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ABSTRACT:
This paper aims to analyse the influence of institutional quality on income inequality across the 27 EU Member States during the period 2011-2022. To achieve this, we employed the Panel Estimated Generalized Least Squares (EGLS) method. Our findings demonstrate that enhancing institutional quality-measured through key institutional factors published by the World Bank under the Good Governance Indicators, such as political stability, regulatory quality, and government efficiency - plays a significant role in reducing income inequality. Furthermore, the study confirms a strong positive correlation between the unemployment rate and income inequality, with additional social factors, such as early school leavers and housing cost overburden, that further exacerbate inequality. Conversely, an increase in government spending on social protection appears to mitigate these disparities. Additionally, we identify a strong inverse relationship between income inequality and human development. The robustness of our model has been validated, reinforcing confidence in the reliability of the estimated parameters and the study's overall conclusions.

Keywords: Institutions, Human Development, Income Inequality, Government efficiency, Political stability, Regulatory quality

1. Introduction

Institutions play an important role in driving socio-economic development and many people make several confusions when defining these. Actually, institutions are the formal and informal rules influencing the human action and, in consequence, the economic activity. Thus, institutions represent the real base of societies. While they also support organizations and authorities, they should not be confused with organizations or authorities. In reality, socio-economic development depends on the inclusiveness of institutional frameworks (Acemoglu and Robinson, 2012), while extractive institutions are responsible for hindering progress / development country level. This also reflects the motivation for choosing this theme.

Extractive institutions are characterized by a concentration of power within a narrow elite that exploits economic and political resources for its own benefit, with little consideration for the general population. Such institutions generate uncertainty for economic operators and foreign investors, thereby obstructing long-term, sustainable development. On the other hand, inclusive institutions refer to political and economic

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systems that promote economic prosperity, guarantee equal rights, ensure access to private property, suport free markets and competition, encourage technological innovation, and promote social rights and the rule of law.

Institutions are also important when setting and implementing the governance rules at European Union level. In this respect, at EU level, inclusive institutions are reflected in human rights, the free market, and the rule of law, which are fundamental elements of modern society and are actively promoted. However, the EU also enforces stricter rules and conditionalities in implementing its rules, such as the ones related to the Stability and Growth Pact and those specific to the European Semester, which may hider growth or the potential output in bad economic times if flexibility is not appropriately applied. When such mechanisms are discretionary applied, these can be perceived as extractive institutions if the process coordinator does not promote a fair treatment for all parts involved (depending on economic specificities). In addition, there were also cases when sanctions proposed under the Excessive Deficit Procedure were cancelled (Spain, Portugal, Hungary), which made the procedure ineffective within the previous economic governance framework. This highlights that improving the quality of institutions should not be prioritised only from a national perspective, but also at European Union level through designing better and simpler rules that could be effectively applied without creating negative externalities and endangering other parts involved.

Considering all mentioned aspects, this paper aims to examine the direct impact of institutional factors on income inequality across European Union Member States during the period 2011-2022. To this respect, we have selected several institutional factors to catch institutional features at country level and to estimate their effect on income inequality, this being followed by using econometric methods to validate the feasibility of the estimation.

2. Theoretical Background

The relationship between income inequality and the unemployment rate is strongly interconnected. Theoretically, a rise in unemployment leads to a decline in household income, which negatively affects income distribution, particularly among low-income groups who are more vulnerable to poverty. Consequently, the relationship between income inequality and the poverty rate is direct. Stiglitz (2012) argued that during the 2008 economic and financial crisis, the surge in unemployment significantly worsened income distribution, especially for low-income population. This positive association between income inequality and unemployment has been demonstrated by several studies, including Sheng (2011) in the United States, Rehm and Biewen (2014) for Germany, Jianu et al. (2021) in EU Member States, Gu (2023) for both the United States and Germany, while Belu et al. (2024), Eurofound (2024), and Jianu et al. (2024) confirmed this relationship in the case of EU countries.

Unemployment is also associated with broader negative effects, such as a higher tax burden, social exclusion, loss of skills and autonomy, psychological distress, and health problems (Sen, 1997). Even though the discussion regarding the impact of income inequality on unemployment has not aroused much interest from economic researchers, some authors (Cynamon and Fazzari, 2015; McCombie and Spreafico, 2015; Balan, 2021;

Mwakalila, 2023) also support the hypothesis stating that income inequality may be also harmful for employment, which raise the need to also take into account a possible bidirectional causality between unemployment and income inequality.

Another strong positive relationship is observed between income inequality and the share of early school leavers (Iannelli and Duta, 2018; Tien and Adoho, 2018; Garcia and Sanchez-Gelabert, 2021; Jianu et al., 2024), human capital being a key driver for income growth and inequality reduction. In this regard, higher education contributes more significantly to employment prospects than pre-tertiary education (Mincer, 1974; Yang and Qiu, 2016).

The inequality-development nexus was first theorized by Lewis (1954) and Kuznets (1955), who say that inequality initially rises during the early stages of development, after that declining as development progresses. Later studies expanded on this theory, suggesting that in the long term, income inequality and economic growth are negatively correlated (Alesina and Rodrik, 1994; Easterly, 2007; Herzer and Vollmer, 2012; Ostry et al., 2014). Barro (2000) argued that the impact of inequality on growth is positive in developed countries, but negative in developing and underdeveloped economies.

Parvin (1973) emphasized that income inequality is primarily a political issue, with potential political consequences arising from social discontent and instability. Empirical research supports this, showing that political instability can affect key political and economic indicators such as inflation, unemployment, and income distribution (Urdal, 2006; Blanco and Grier, 2009). Malikov and Alimov (2022) also highlighted the significant role of political stability and institutional quality in influencing income inequality.

Regulatory policies may also have regressive effects on income distribution (Chambers and O'Reilly, 2022), since countries with higher regulatory burdens often experience greater income inequalities, particularly in terms of wages and occupational structures (Bailey et al., 2019; Mulholland and Shupe, 2019).

The role of government institutions is vital, as their quality and efficiency contribute to reducing corruption, improving productivity, enhancing societal well-being, and promoting equitable income distribution (Shafique et al., 2006). Finally, Nguyen (2023) indicates that institutional quality encompasses dimensions such as political stability, corruption control, rule of law, regulatory quality, and government effectiveness, particularly in the management of public spending.

3. Methods

In this section, we presented the methodological framework used to reach the objective of the paper, respectively estimating the effect of institutions on income inequality in European Union Member States. Our assessment covers the period 2011-2022, while using data extracted from Eurostat, United Nations, Heritage and World Bank (World Governance Indicators). To this respect, we used Estimated Generalized Least Squares (EGLS) weighted by Period SUR option (to ex-ante tackle the existence of heteroscedasticity) on the following equation:

$$income\_quintile_{it} = \alpha_0 + \alpha_1 unem_{it} + \alpha_2 polstab_{it} + \alpha_3 h\_cost\_overburd_{it} + \alpha_4 early\_leavers_{it} + \alpha_5 economic\_freedom_{it} + \alpha_6 HDI_{it} + \alpha_7 g\_soc_{it} + \alpha_8 regulatory_{it} + \alpha_9 goveff_{it} + \varepsilon_t \quad (1)$$

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, where:

- ✓ *income_quintile* represents the S80/S20 share, respectively the percentage of income obtained by the individuals from the fifth quintile to the percentage of income obtained by the individuals from the first quintile (Eurostat data).
- ✓ *unem* is the unemployment rate (Eurostat data).
- ✓ *polstab* represents the political stability and absence of violence / terrorism index (World Bank data).
- ✓ *h_cost_overburd* is the percentage of population living in a household where housing costs represents at least 40% of total household cost (Eurostat data).
- ✓ *early_leavers* represents the rate of population aged between 18-24 years that dropped out from school or from other training programmes (Eurostat data).
- ✓ *economic_freedom* is the index of economic freedom (Heritage data).
- ✓ *HDI* reflects the human development index (United Nations data).
- ✓ *G_soc* is the government expenditures on social protection (Eurostat data).
- ✓ *regulatory* is the index of regulatory quality (World Bank data).
- ✓ *goveff* represents the index of government efficiency.
- ✓ ε_t - is the error term.

4. Results

In this section, we analysed the results obtained to provide a clear view on the relationship between income inequality and its driving factors, including the ones related to institutions. In this context, we presented the coefficients obtained in *Figure 1*, which also reflects other relevant tests and statistics, as R-squared, Fisher test probability, significance of the estimators, Durbin-Watson stat and standard errors.

According to the results, we found a negative relationship between institutions and income inequality expressed through the S80/S20 share. In particular, the estimation indicates that the S80/S20 share decrease by 0.012 points when political stability and absence of violence / terrorism index increase by 1 deviation point. This could be explained by the fact that countries with a higher political stability are less vulnerable to social risks, since it attracts investors and new economic opportunities for the population, this being associated with a lower income inequality.

In addition, the results proved that an increased regulatory quality is associated with a lower income inequality. The estimated effect shows that a hike in the regulatory quality index by 1 deviation point reduces the S80/S20 share by 0.010 points, this confirming that improving the quality of regulatory frameworks is also associated with equal opportunities for the population, which increase income convergence.

However, quality of institutions are also reflected in the government efficiency, this being an important factors driving economic and social development. To this end, the impact of government efficiency on income inequality seems close to the one calculated for political stability (-0.012). The effect can be justified by the fact that government efficiency is also transposed into better economic opportunities for all, but also in a higher ownership of the existing rules, avoiding social fragmentation due to illegal and opportunist behavior, respectively corruption.

Dependent Variable: INCOME_QUINTILE
Method: Panel EGLS (Period SUR)
Date: 11/30/24 Time: 22:52
Sample: 2011 2022
Periods included: 12
Cross-sections included: 27
Total panel (balanced) observations: 324
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UNEM	0.064608	0.009378	6.889193	0.0000
POLSTAB	-0.012431	0.002477	-5.018952	0.0000
H_COST_OVERBURD	0.023471	0.006280	3.737325	0.0002
EARLY_LEAVERS	0.051906	0.010052	5.163890	0.0000
ECONOMIC_FREEDOM	0.044763	0.009831	4.553157	0.0000
C	8.126054	1.736338	4.679995	0.0000
HDI	-0.051790	0.020137	-2.571854	0.0106
G_SOC	-0.023598	0.013358	-1.766556	0.0783
REGULATORY	-0.010251	0.005131	-1.997889	0.0466
GOVEFF	-0.012423	0.005138	-2.418050	0.0162

Weighted Statistics

R-squared	0.527414	Mean dependent var	1.684495
Adjusted R-squared	0.513868	S.D. dependent var	3.012854
S.E. of regression	0.935651	Sum squared resid	274.8890
F-statistic	38.93656	Durbin-Watson stat	1.917265
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.575825	Mean dependent var	4.849599
Sum squared resid	185.1361	Durbin-Watson stat	0.182612

Figure 1: Results of the estimation.
Source: Calculations of the authors in Eviews 10 software

Institutions are important driving forces of many socio-economic indicators, but usually, its impact are not among the highest ones, which increase the need to also analyse other control variables. In this context, we found that an increase in the unemployment by 1 percentage point (pp) determines a rise in the S80/S20 share with 0.064 points, this effect being explained by the fact that people outside the employment tend to obtain lower incomes from other sources, which increase the gap between the share of income obtained by upper quintile and the lower one.

Household costs are also a relevant factor for income inequality. According to the results, an increase in the household cost overburden rate leads to a rise in the S80/S20 share by 0.023 points, this confirming that vulnerable social groups are more affected by household costs than the individuals from upper quintiles.

The data also demonstrates that early leavers from education and training is associated with a higher income inequality (impact of 0.051 points on S80/S20 share), while human development index has a negative relationship with S80/S20 share (impact of -0.051 points). Additionally, we found a positive relationship between economic freedom and income inequality, but also a negative one between government expenditures on social protection and S80/S20 share. Despite that the effect of social expenditures is clear, it worth to be mentioned that the positive impact of economic freedom on income inequality is justified by the fact that people having an increased access to resources make profits faster, as a consequence of the free market.

The results show that all estimators are significant at 5%, excepting the coefficient calculated for government expenditures on social protection which is significant at 10%. In addition, the standard errors are low and close to 0 which indicates that the coefficients are adequately calculated, while R-squared value highlights that the evolution of the

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analysed independent variables explains 52.74% of the dependent variable fluctuation, which support the hypothesis that there are also other factors that may influence income inequality and were not added in the model. However, this will not affect the feasibility of the results if all conditions that should be satisfied to confirm the best linear unbiased estimators hypothesis will be met. Moreover, the probability of the Fisher test rejects the null hypothesis indicating that the model is not valid, confirming the alternative one. Regarding the residuals, the Durbin-Watson stat confirmed the absence of autocorrelation, while Jarque-Bera test (*Figure 2*) confirmed the normal distribution of the residuals (Prob. > 0.05).

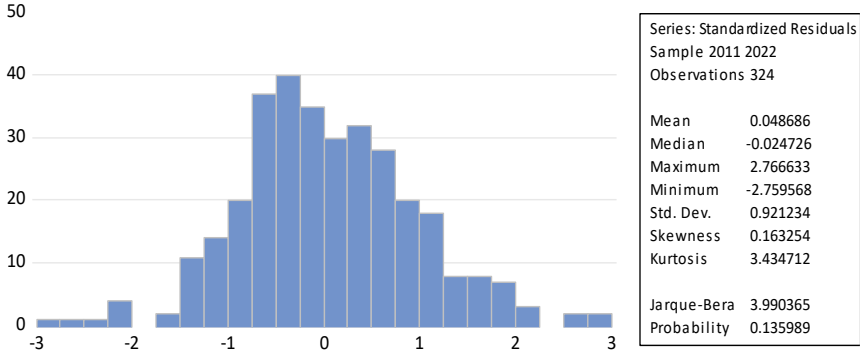

Figure 2: Distribution of the residuals.
Source: Calculations of the authors in Eviews 10 software

To confirm the feasibility of our estimation, we also tested the cross-section dependence test and the existence of multicollinearity (*Table 1*). The results of the tests performed demonstrate that the model is not affected by cross-section dependence (taking into account that the probabilities corresponding to the BP LM and Pesaran tests are higher than 5%) and multicollinearity, since centered VIF coefficients are lower than 4 (indicating strong model independence).

Table 1. Cross-section dependence and multicollinearity tests

Test	Prob. / Value	Result
Breusch-Pagan LM	0.2146	No cross-section dependence
Pesaran scaled LM	0.4351	No cross-section dependence
Pesaran CD	0.1149	No cross-section dependence
Variance inflation factors (centered VIF)	unem (2.257101) polstab (1.224759) h_cost_overburd (1.176223) early_leavers (1.242801) economic_freedom (1.455874) HDI (2.274182) g_soc (1.226229) regulatory (1.478094) goveff (1.528734)	Centered VIF values < 4 no multicollinearity

Source: Calculations of the authors in Eviews 10 software

5. Conclusions

Our paper confirmed the inverse relationship between institutions and income inequality, in particular the negative impact exercised by the political stability and absence of violence and terrorism, regulatory quality and government effectiveness. However, the paper also indicates a positive relationship between income inequality and other factors, such as economic freedom, early leavers from education and training rate, household overburden cost and unemployment rate, while the nexus between S80/S20 share and human development index, respectively government expenditures on social protection proved to be negative.

The performed tests confirmed the feasibility of the results, but it should be taken into account that the coefficient of government expenditures on social protection is exposed to some uncertainty, since it is significant at 10%, while the others are significant at 1% and 5%. In addition, R-squared value highlights some limitations of our estimation, taking into consideration that the evolution of the analysed independent variables explains only 52% of the dependent variable fluctuation, which support the hypothesis that there are also other factors that may influence income inequality and were not added in the model.

Regarding our further work, we will try to accommodate our efforts to explore the synergies between institutional factors that may influence income inequality. Such an approach may provide a real value added in this research area since in may allow determining the impact of institutional synergies on income inequality. Moreover, we will try to explore the effects at country level through an Panel ARDL / PMG model to support the comparision between effects obtained at EU level to the ones that will be obtained for each Member State, respectively to examine the causal relationships between independent variables and the dependent through using specific tools such as Granger causality.

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