Equality of Opportunity as a Road to Growth: Micro-estimates for the EU

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Takeaways

An equal opportunity society guarantees that those who exert an equal degree of effort, regardless of their circumstances, are able to achieve equal levels of outcome.

Using EU-SILC data and modules for 2005, 2011, 2019 and 2023, this paper examines the magnitude and evolution of the inequality of opportunity in earnings in the EU:

- Inequality of opportunity in the EU has been gradually and consistently decreasing.
- Gender and parental education remain key barriers to opportunities in labour markets.
- Public policies help promote the formation and effective employment of human capital.

Introduction

Introduction – Literature review

- For the EU, applications to earlier data vintages have documented a decrease in the relative inequality of opportunity (Filauro et al., 2023).
  - Earlier country-specific estimates can be found in Marrero and Rodriguez (2012), Checchi et al. (2016), Palomino et al. (2019), Suárez Álvarez and López Menéndez (2021), Brunori et al. (2023), and Filauro et al. (2023).
  - Inequality of opportunity across EU countries has significantly converged over time; for earlier convergence tests, see Suárez Álvarez and López Menéndez (2021) and Filauro et al. (2023).
- Parental education, occupation and household cultural environment are key determinants (e.g., Palmisano, 2021; Marrero et al., 2023)

Introduction – Literature review

- Studies suggest a negative correlation between inequality of opportunity and economic growth (Ferreira et al., 2018; Marrero and Rodriguez, 2013).
- Indices of inequality of opportunity are strongly correlated with indicators of intergenerational mobility (e.g., Brunori et al., 2013)
  - the Great Gatsby curve: more inequality corresponds with lower mobility
- ... while higher social mobility is associated with (faster) economic growth (e.g., Bradbury and Triest, 2016; Neidhöfer et al., 2018, 2024).

- Pointing to the importance of targeted public policies to support equity and, by consequence, growth

Introduction – Involuntary circumstances affect labour outcomes

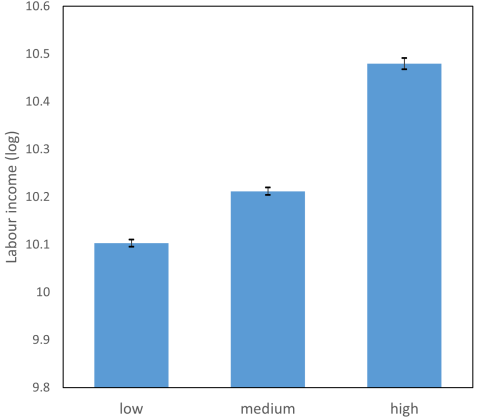

Figure 1: Father's education

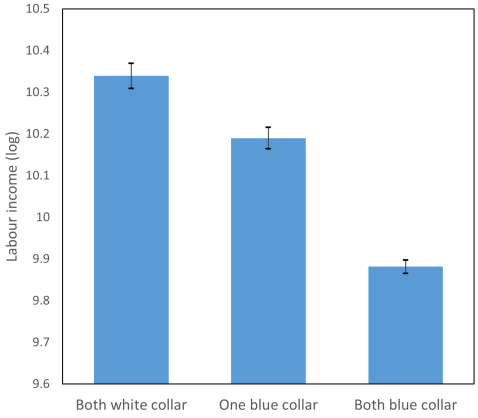

Figure 2: Parental occupation

Introduction – Contribution

- Our results **extend the scope of existing findings** on the inequality of opportunity in the EU to 2023, confirming the continuation of a downward trend.
- Despite this trend and EU-wide convergence, the analysis of country data also point to some exceptions to this trend.
- Leveraging the micro data, our results also show that **contributing factors affect income groups heterogeneously**.
- Finally, we shown suggestive evidence for **a role for social policies**.

Approach

Data

- A rigorous empirical study of inequality of opportunity requires comparable measures of individual disposable income and data on individual circumstances or social origins to be measured in a comparable and homogenous manner
- There are only few databases with this information and even then the number circumstances covered in the data tends to be limited
- The **EU-SILC** database has emerged as the default database for the analysis of inequalities of opportunity in the European Union

Data

- EU-SILC data and modules on intergenerational transmission of disadvantages
- Available for 2005, 2011, 2019 and 2023
- Core variables, such as sex, age, household identifiers, country of residence, region of residence, educational attainment, employment status, and net monthly (household) income
- Modules, incl. parents' education and occupation

Estimation approach

- The **ex-post approach** states that there is equality of opportunity if all individuals who exert the same degree of effort obtain the same outcome
- The **ex-ante approach** refers to equality of opportunity if all individuals face the same set of opportunities regardless of their circumstances
- For comparability reasons, this research project focuses on the ex-ante approach:
  - estimated as the between-type inequality component
  - following the parametric procedure of Ferreira and Gignoux (2011)

Estimation approach

1. **Estimate a log-linearized relationship** between individuals' earnings and their observed circumstances using Ordinary Least Squares (OLS)
   - Pan-European approach treats the EU population as a whole and considers individuals' country of origin as a circumstance, following Milanovic (2015).
   - Country-specific approach is implemented to measure inequality of opportunity for each country separately (see e.g., Ferreira and Gignoux, 2011)
2. Use the estimated coefficients to **obtain the smoothed income distribution** in which all individuals belonging to the same type (i.e., sharing the same set of circumstances) are assigned the same income
3. **Compute the between-type inequality** – that is, the inequality of opportunity – by applying a Mean Logarithmic Deviation (MLD) to the obtained smoothed income distribution, in which all individuals have the same circumstances

Sample

The estimations are based on EU-SILC data for

- employed and self-employed
- household heads
- aged 25 to 65
- in full-time work
- in the EU27

Earnings compromise PPP-adjusted log earnings from (i) employee cash or near cash income, and (ii) cash benefits and losses from self-employment; excluding missing data or negative/zero values for income, and winsorised at the 99% level by age group.

Results

Results – EU inequality of opportunity over time

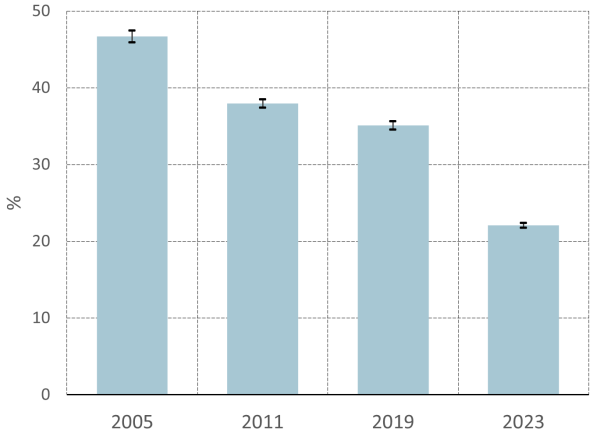

Figure 3: Relative inequality of opportunity (%)

Results – EU-wide estimation results

Table 1: EU-wide models for log labour income

	2005	2011	2019	2023
Age	0.009***	0.008***	0.007***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)
Sex	0.184***	0.162***	0.187***	0.176***
	(0.009)	(0.008)	(0.007)	(0.005)
Disability	-0.436***	-0.387***	-0.276***	-0.326***
	(0.042)	(0.031)	(0.027)	(0.019)
...				
Observations	26,102	33,721	38,213	76,616
Adj. R^2	0.441	0.357	0.305	0.192
Absolute IoO	0.1398	0.0974	0.0791	0.0471
Relative IoO (%)	46.69	37.96	35.10	22.08
	(0.301)	(0.213)	(0.206)	(0.115)

Note: Estimation results for employed and self-employed household heads aged 25-65 years in full-time work, including country fixed effects. Data for 2005 do not cover BG, EL, ES, HR, IT, LV, MT, PT, and RO, due to lack of observations. Standard errors, clustered at the country level, in parentheses: $^{*}\ p < 0.10$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

Results – EU-wide estimation results

Table 2: EU-wide models for log labour income (continued)

	2005	2011	2019	2023
...				
Country of birth:				
- EU	0.067**	-0.212***	-0.175***	-0.145***
	(0.030)	(0.027)	(0.030)	(0.020)
- non-EU	-0.089***	-0.109***	-0.110***	-0.236***
	(0.021)	(0.023)	(0.023)	(0.015)
Country of birth - father:				
- EU		-0.040**	0.084***	0.010
		(0.020)	(0.029)	(0.021)
- non-EU		-0.014	0.003	-0.029*
		(0.027)	(0.020)	(0.016)
Country of birth - mother:				
- EU		0.055***	-0.131***	-0.016
		(0.021)	(0.030)	(0.021)
- non-EU		-0.163***	0.009	0.021
		(0.028)	(0.022)	(0.016)
...				
Observations	26,102	33,721	38,213	76,616
Adj. R^2	0.441	0.357	0.305	0.192

Results – EU-wide estimation results

Table 3: EU-wide models for log labour income (continued)

	2005	2011	2019	2023
...				
Education - father:				
- medium skilled	0.139***	0.101***	0.083***	0.119***
	(0.011)	(0.010)	(0.010)	(0.006)
- high skilled	0.155***	0.159***	0.114***	0.253***
	(0.016)	(0.014)	(0.012)	(0.008)
Education - mother:				
- medium skilled	0.074***	0.101***	0.089***	0.113***
	(0.011)	(0.010)	(0.010)	(0.007)
- high skilled	0.054***	0.099***	0.125***	0.189***
	(0.018)	(0.015)	(0.013)	(0.009)
Parental occupation:				
- one blue collar	-0.047***	-0.051***	-0.082***	
	(0.014)	(0.012)	(0.011)	
- both blue collar	-0.148***	-0.159***	-0.222***	
	(0.014)	(0.013)	(0.011)	
Observations	26,102	33,721	38,213	76,616
Adj. R^2	0.441	0.357	0.305	0.192

Results – The drivers of inequality of opportunity

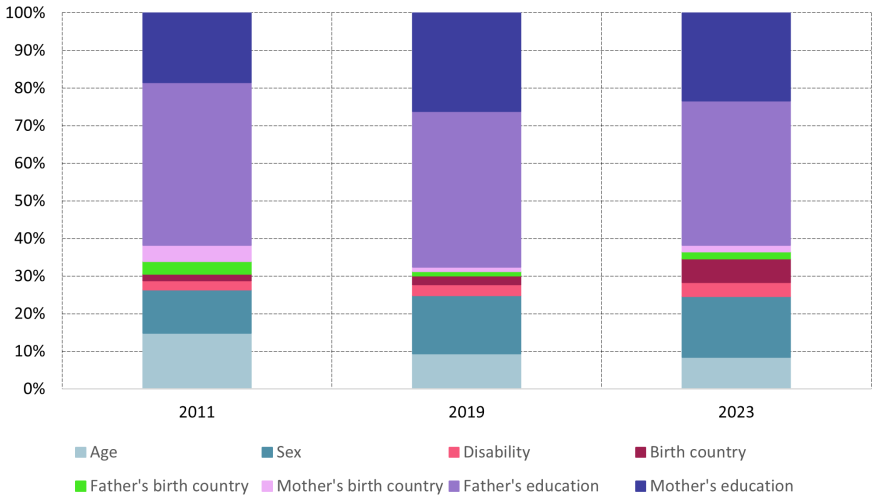

Figure 4: Contribution of circumstances to inequality of opportunity (%)

Results – Differences across income

Table 4: EU-wide quantile models for log labour income, 2023

	25%	Median	75%
Age	0.006***	0.008***	0.011***
	(0.000)	(0.000)	(0.000)
Sex	0.138***	0.165***	0.187***
	(0.008)	(0.007)	(0.008)
Disability	-0.313***	-0.270***	-0.277***
	(0.035)	(0.027)	(0.020)
...			
Observations	74,628	74,628	74,628
Adj. R^2	0.126	0.134	0.128
Quantile value of Y	9.873	10.257	10.637

Note: Estimation results for employed and self-employed household heads aged 25-65 years in full-time work, including country fixed effects. Standard errors, clustered at the country level, in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Results – Differences across income

Table 5: EU-wide quantile models for log labour income, 2023 (continued)

	25%	Median	75%
...			
Country of birth:			
- EU	-0.158***	-0.113***	-0.081*
	(0.035)	(0.028)	(0.044)
- non-EU	-0.218***	-0.217***	-0.264***
	(0.028)	(0.019)	(0.029)
Country of birth - father:			
- EU	-0.013	-0.022	-0.016
	(0.021)	(0.027)	(0.036)
- non-EU	-0.072**	-0.021	0.036
	(0.028)	(0.022)	(0.030)
Country of birth - mother:			
- EU	-0.032	0.015	-0.003
	(0.029)	(0.031)	(0.035)
- non-EU	0.037	0.021	-0.006
	(0.029)	(0.020)	(0.031)
...			
Observations	74,628	74,628	74,628
Adj. R^2	0.126	0.134	0.128
Quantile value of Y	9.873	10.257	10.637

Results – Differences across income

Table 6: EU-wide quantile models for log labour income, 2023 (continued)

	25%	Median	75%
...			
Education - father:			
- medium skilled	0.098***	0.093***	0.092***
	(0.010)	(0.009)	(0.010)
- high skilled	0.180***	0.230***	0.286***
	(0.014)	(0.013)	(0.015)
Education - mother:			
- medium skilled	0.081***	0.088***	0.101***
	(0.009)	(0.009)	(0.011)
- high skilled	0.152***	0.156***	0.189***
	(0.015)	(0.012)	(0.014)
Observations	74,628	74,628	74,628
Adj. R^2	0.126	0.134	0.128
Quantile value of Y	9.873	10.257	10.637

Results – Country-specific estimation results

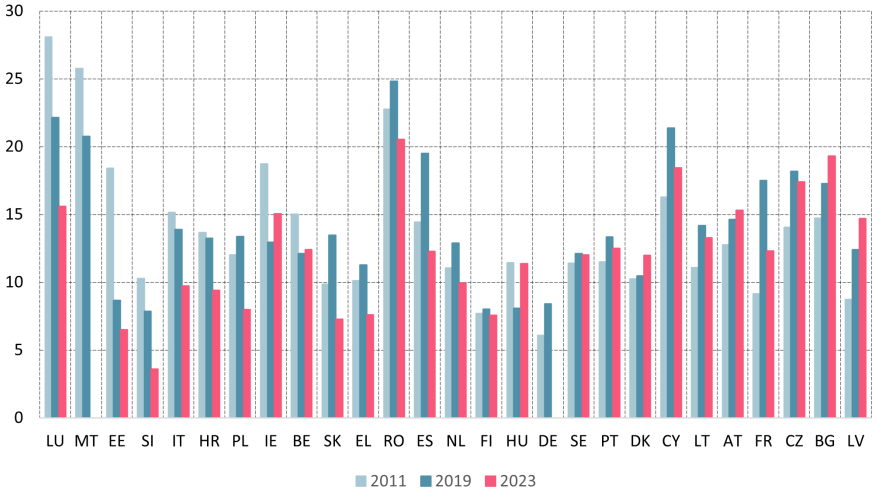

Figure 5: Relative inequality of opportunity (%)

Policy

Policy

Equality of opportunity is not just a moral imperative, it is an essential driver of economic success:

- Equality of opportunity ensures that talent and skills are utilized optimally
- When barriers are removed, resources flow to their most productive uses. This enhances overall productivity and competitiveness.
  - When everyone has equal access to education, healthcare, and training, it leads to a more skilled and productive workforce.
  - when individuals believe they can succeed based on their abilities and efforts, they are more likely to take risks and start businesses, driving innovation and growth.

Policy

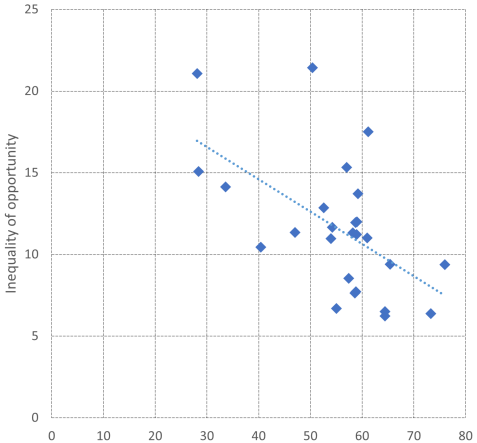

Figure 6: Inclusion in education (%)

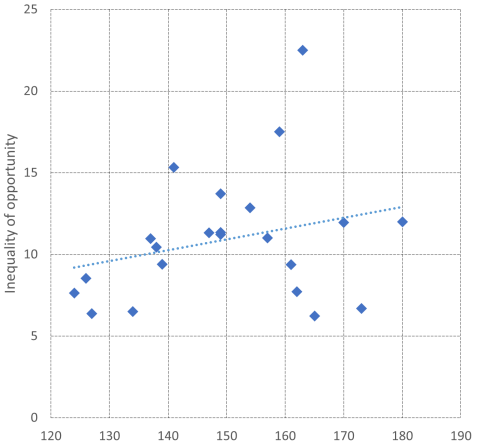

Figure 7: College premium (index)

Policy

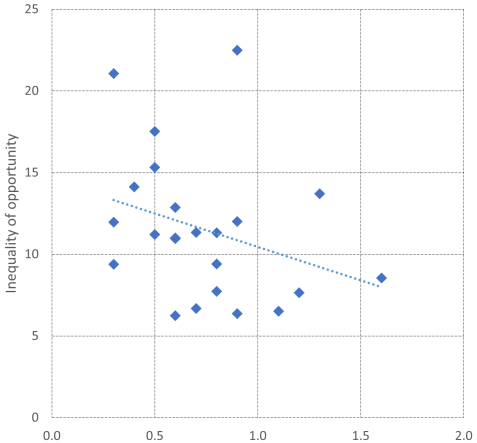

Figure 8: Public ECEC spending (% GDP)

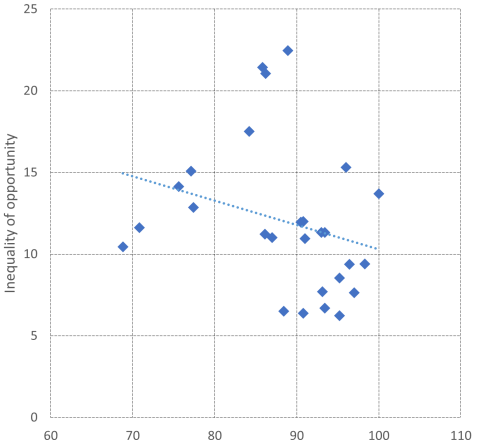

Figure 9: ECEC enrolment (%)

Conclusion

Conclusion

Using subnational public investment data for the EU27 over 1995-2021, we find that

- Inequality of opportunity in the EU has been gradually and consistently decreasing, although country differences remain.
- Gender and parental education remain key barriers to opportunities.
- Disability status and geographical place of birth gain importance in explaining differentials across lower income individuals.
- Suggestive evidence that public policies play a role in the formation and effective employment of human capital.

Next steps:

- Decomposition of drivers by country
- Develop analysis on role of policy: e.g., panel regression analysis

Questions?