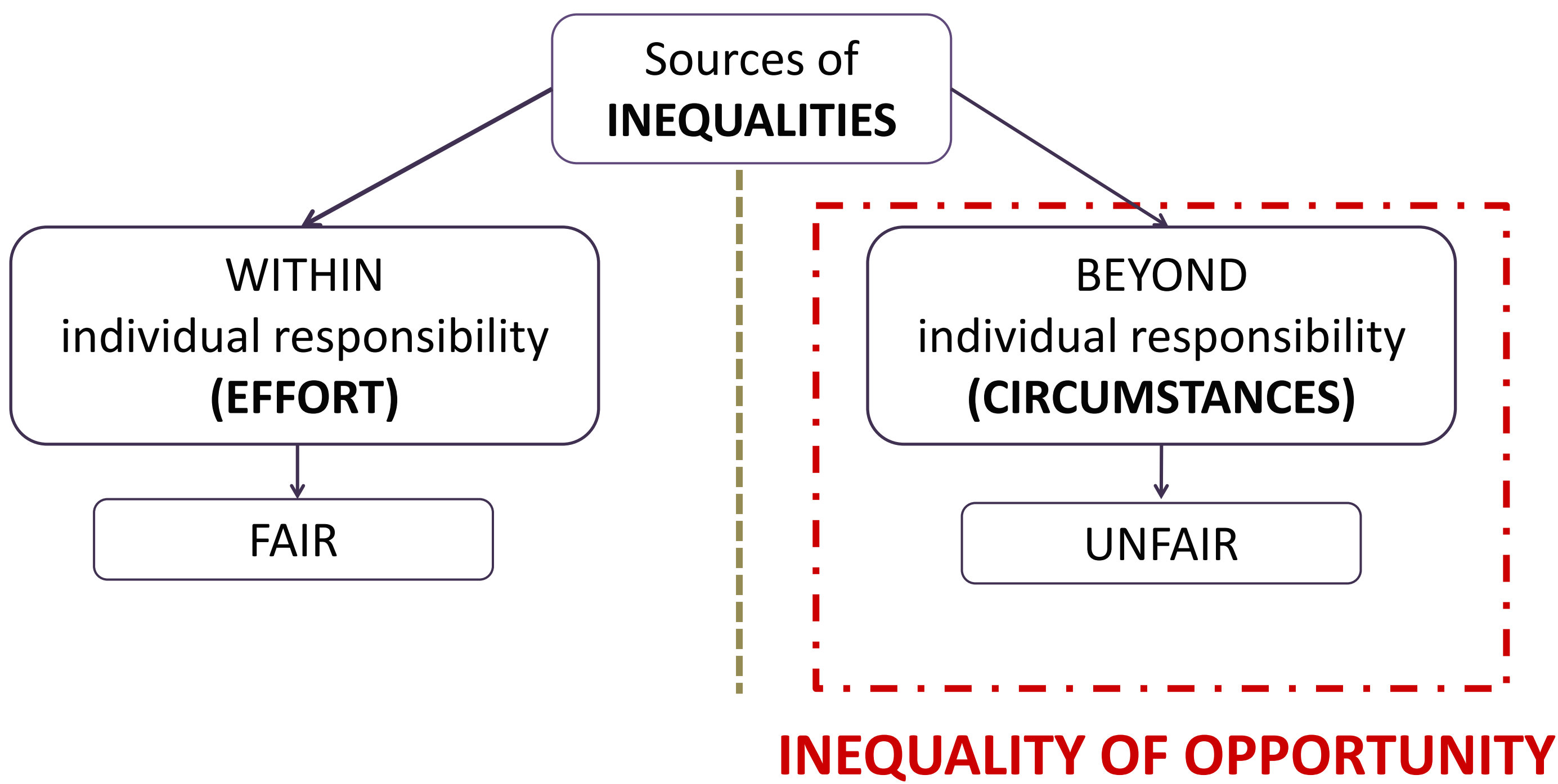


Analyzing Inequalities of Opportunities in Educational Achievements

Inequality of Opportunity (IOp)



Research Question

WHAT IS THE DEGREE OF **INEQUALITY OF OPPORTUNITY** IN EDUCATIONAL ACHIEVEMENTS IN EUROPEAN COUNTRIES?

Literature Review

- J. Roemer (1998): Theories of Distributive Justice
- F. Ferreira and J. Gignoux (2014): The measurement of educational inequality: Achievement and opportunity

Methodology

Data set

Program for International Student Assessment
PISA 2012

21 European countries

15 year-old students

Variables

Dependent	Explanatory			
	Circumstances			Effort
	Individual	Family	School	
Achievements in mathematics tests	<ul style="list-style-type: none">GenderImmigration background	<ul style="list-style-type: none">Parents' educationParents' occupationHome possessions	School <ul style="list-style-type: none">Educational resourcesExtracurricular activities Teachers <ul style="list-style-type: none">MoraleClimateShortage	<ul style="list-style-type: none">PerseveranceAttitude towards schoolHome works hours/weekNot Repeating a courseNot skipping classes

Model I

Overall inequality in educational achievements (y_i) is disentangled in two **uncorrelated** components:

- Inequalities due to circumstances (y_i^C)
- Inequalities due to effort (y_i^E)

Problem: Circumstances and effort are **correlated**.

Solution: two ways to clean the correlation

- ROEMER'S** point of view: treat correlated part as **circumstances**
- SWIFT'S** point of view: treat correlated part as **effort**.

Model II

PROCEDURE

- Imputation of missing values
- Estimate the models
- Construct **counterfactual** distributions where the only inequalities are due to circumstances (y_i^C).
A **parametric approach** is used to construct counterfactuals.
- Measure **IOp**

$$y_i = \alpha + \beta \vec{C}_i + \gamma \vec{E}_i + u_i$$

ROEMER

$$y_i = \alpha + \beta^R \vec{C}_i + \gamma^R \vec{E}_i + u_i$$

SWIFT

$$y_i = \alpha + \beta^S \vec{C}_i + \gamma^S \vec{E}_i + u_i$$

Counterfactual

$$y_i^C = \hat{\alpha} + \hat{\beta}^R \vec{C}_i + \hat{\gamma}^R \vec{E} + \hat{u}_i$$

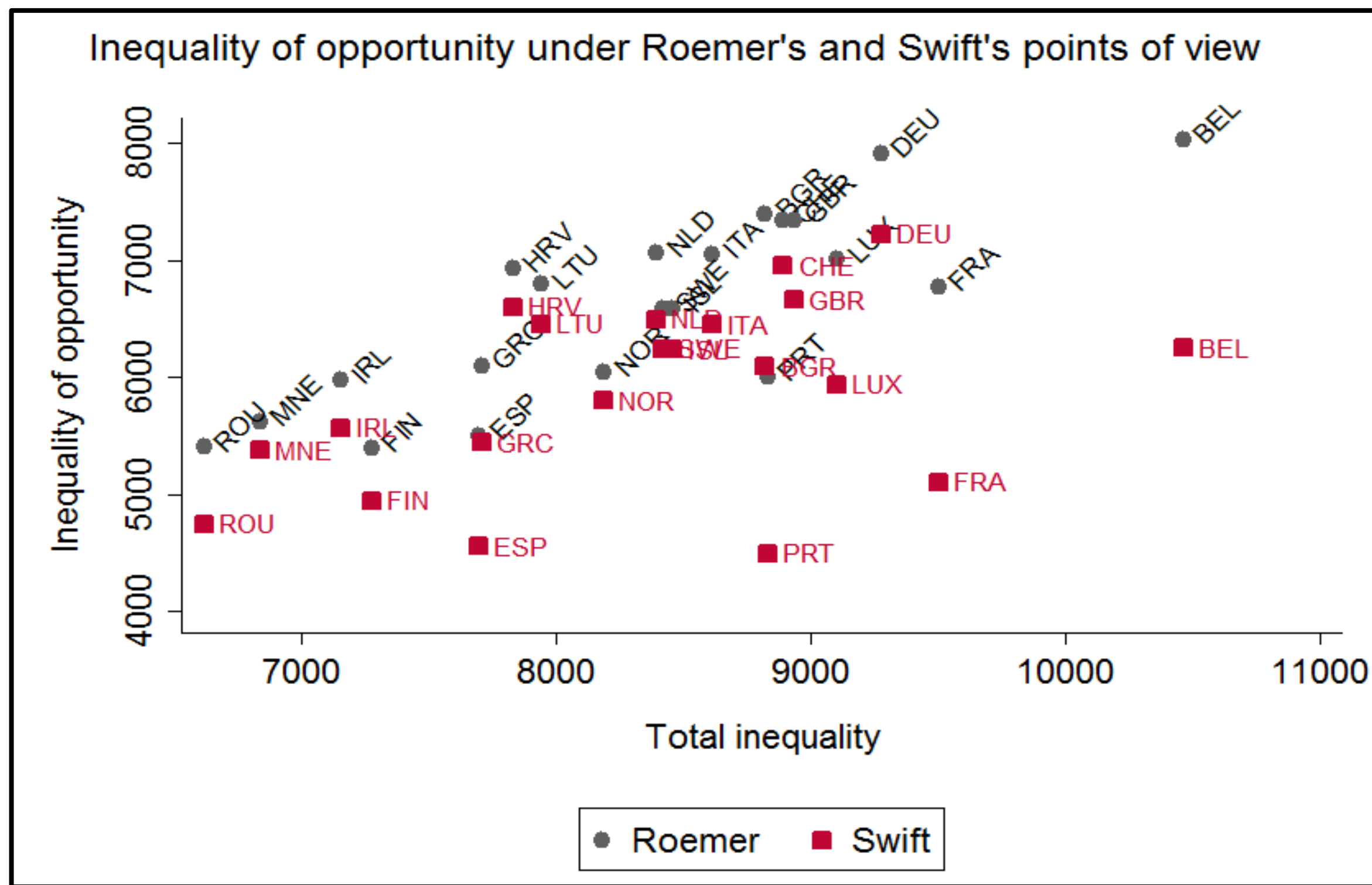
$$y_i^C = \hat{\alpha} + \hat{\beta}^S \vec{C}_i + \hat{\gamma}^S \vec{E} + \hat{u}_i$$

IOp measurement

$$IOp^R = var(\hat{\beta}^R C_i) + var(\hat{u}_i)$$

$$IOp^S = var(\hat{\beta}^S C_i) + var(\hat{u}_i)$$

Results



- Lowest IOp and total inequality** in Romania, Montenegro, Ireland, Finland and Spain.
- Highest IOp and total inequality** in Belgium, Germany, United Kingdom, Switzerland, Bulgaria
- High total inequality but Low IOp:** in Portugal and France
- Large influence of the correlation between circumstances and effort in IOp measures** in Belgium, France, Portugal, Luxembourg and Bulgaria