

CONFERENCE “INCOME AND  
WEALTH INEQUALITY: DRIVERS  
AND CONSEQUENCES”, Gdansk,  
09/28/2023



# What we brought with us and what we achieved. Decomposition of income inequality in 27 European countries by social origin and other factors

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# Two paradigms

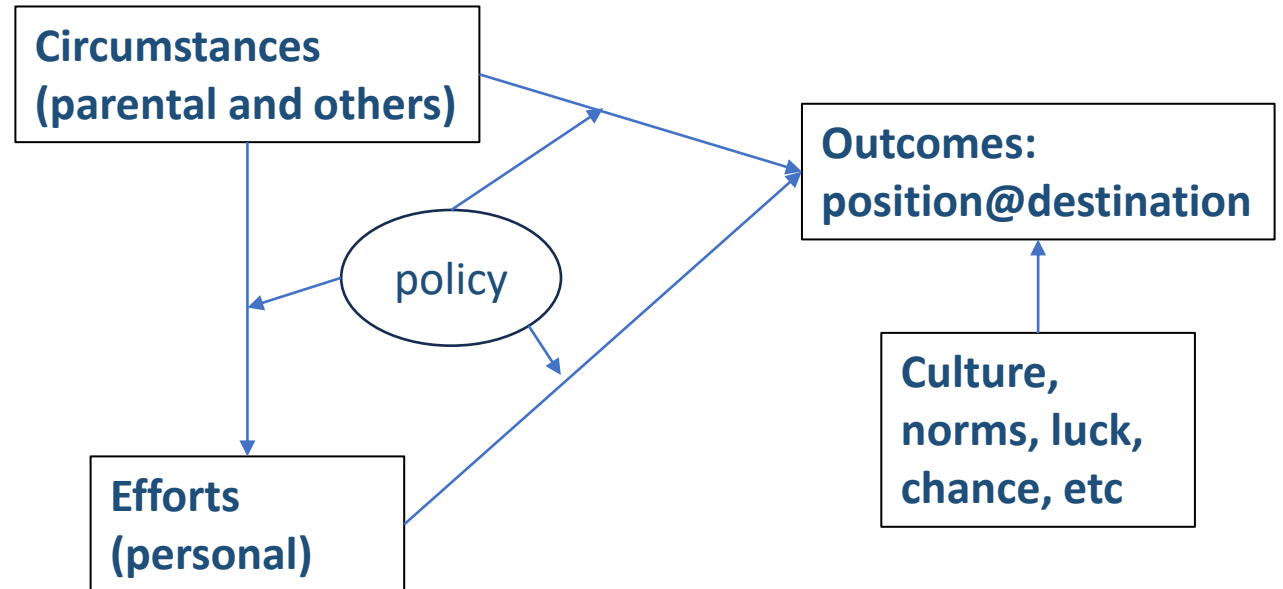
## Social mobility as transitions between statuses

Erikson, Andorka, Golthorpe, Breen et al etc



## Social mobility as chances of attainment (equality of opportunity)

Dworkin, 1981, Roemer, 1998



Theories:

- Social classes and their relations
  - by property relationship – a’ la Marx
  - by market positions – a’ la Weber
  - by different forms of capital - a’ la Bourdieu
- Status groups
  - by consumption, lifestyle, etc - a’ la Weber (at extreme: caste)
- Income classes (deciles or median% groups)
- Other kinds of social groups

Theories:

**Outcome = f (circumstances; efforts, policies, chance)**

Normative message: policies need to clear away obstacles of merit to prevail

Criteria to measure EOP:

- compensation for differences in chances (retrospect)
- ensure equal returns to equal efforts (prospective)

# Research questions

**Q1** What differences can we detect across European countries by the effect of parental origin on incomes?

**Q2** How does the effect of parental origin differ by income ranks inside the distribution?

**Q3** What macro factors can be associated to the cross-country differentials in levels and patterns of parental effects?

# Data

Source: EU-SILC 2005, 2011, **2019**

Outcome variable: equivalized household income (log or decile)

Individual attributes	
Childhood demographic circumstances	gender, age, number of missing parents, number of siblings, degree of urbanization at age 14
Parental background circumstances	parental education, financial situation at age 14
Efforts	own education, labour market situation
Limitations: administrative vs. survey income data; age group 25-59; gaps around childhood variables	

## Structural background vars

Macro-economy	GDP per cap, pps, Activity rate	Eurostat
Inequality	Gini, Top10%/Bottom 40%	Eurostat, EU-SILC
Class structure	% lower classes	Goedemé, Paskov and Nolan, 2021
Education attainment structure	% ISCED 0-2 % ISCED 5-8	Eurostat
Political inclusiveness and transparency	Rule of law, Corruption Voice Accountability	World Bank, WGI indices

# Methods

1: How far do the explanatory power of the characteristics differ - in international comparison

Method 1.1: comparison of explained variances

Method 1.2: regression-based inequality decomposition (INEQRBD, Fiorio and Jenkins)

Method 1.3: linear regression for parental education

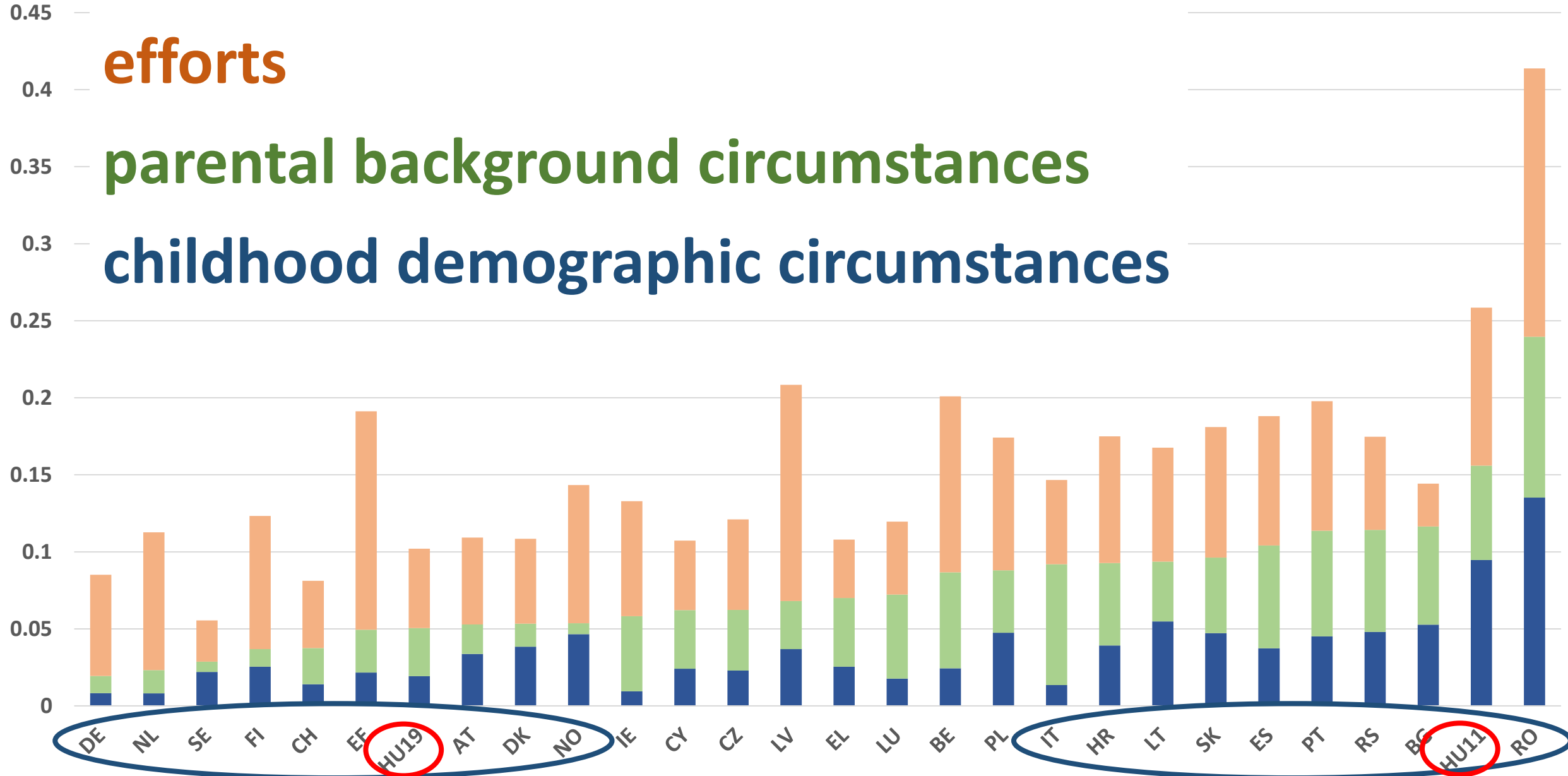
2: What characterises the "forward" probabilities inside the distribution?

Method 2.1: odds ratios of crossing deciles

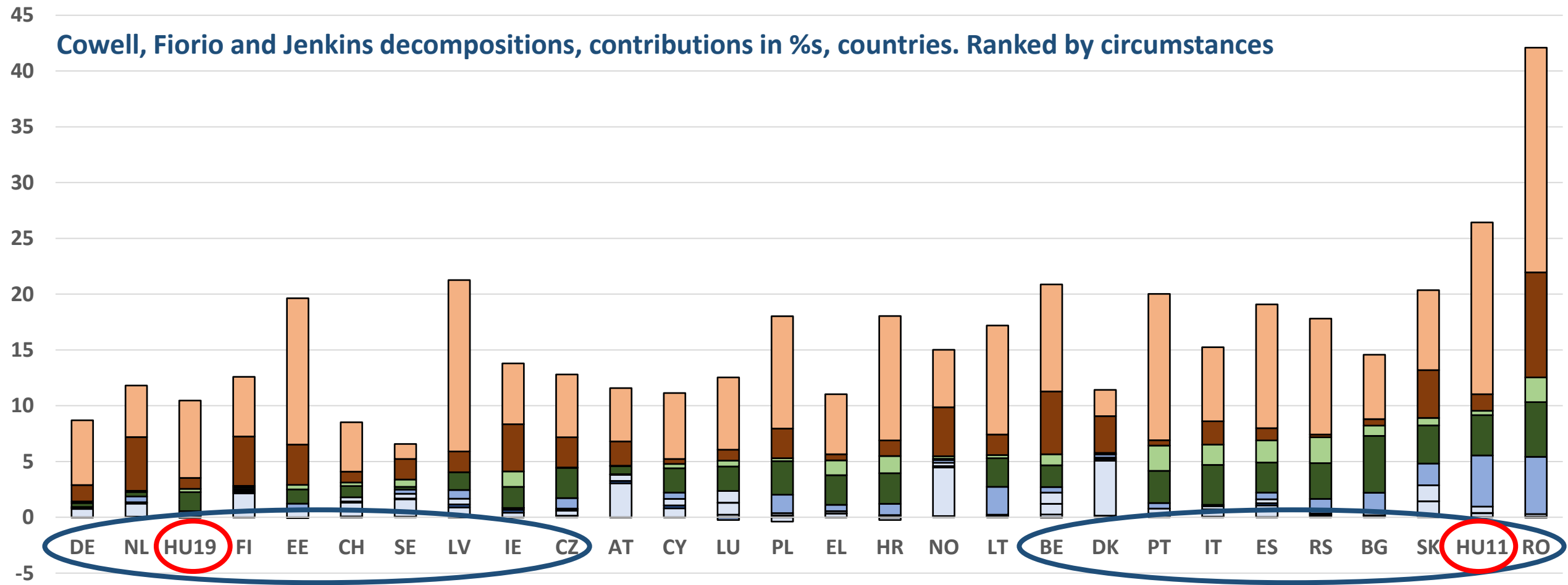
3. What kind of structural characteristics can be associated with the level of "circumstances"?

Method 3.1: Pearson-correlation analysis'

# Q1: Explained R2, 28 European countries, 2019

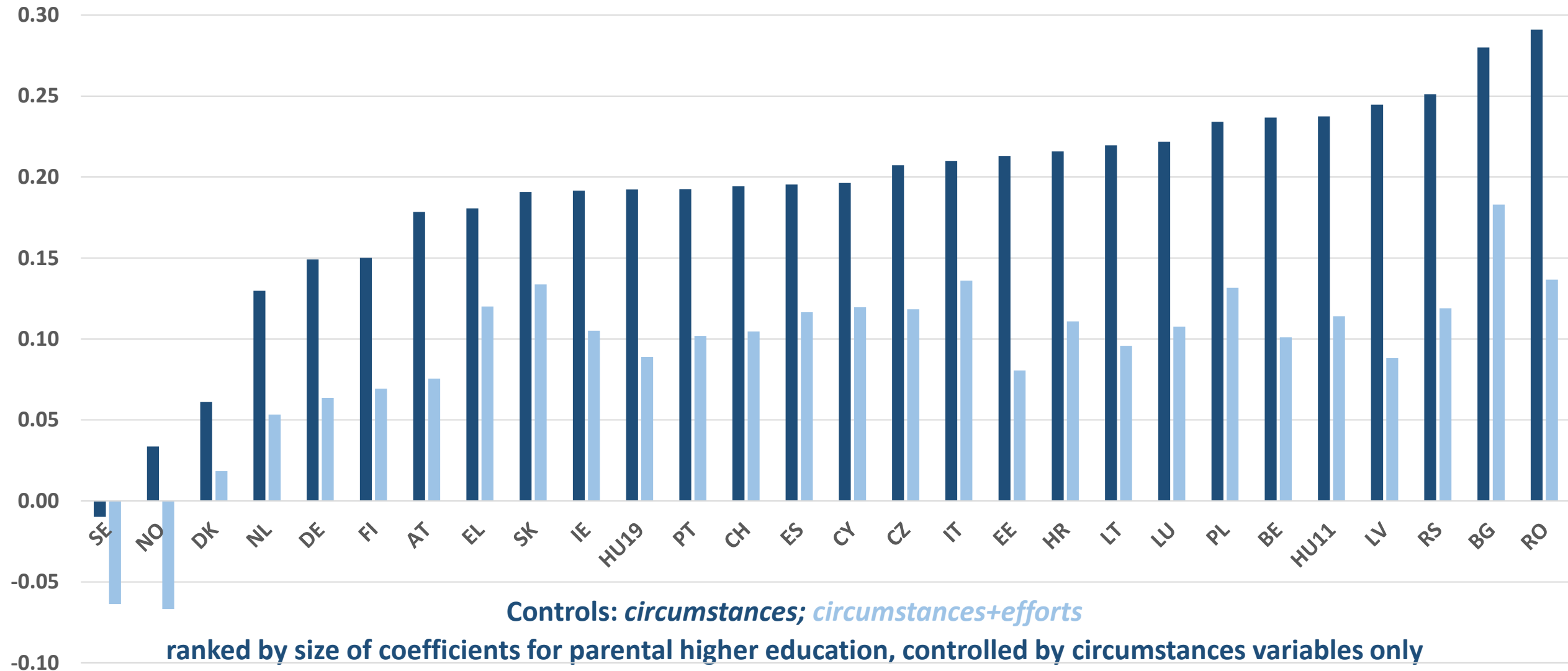


# Q1: Proportional contributions to inequality of various factors (between group variance, ineqrbd, 2019)



sex age missing parents number of children degree of urbanisation 14 parental education financial situation 14 employment education

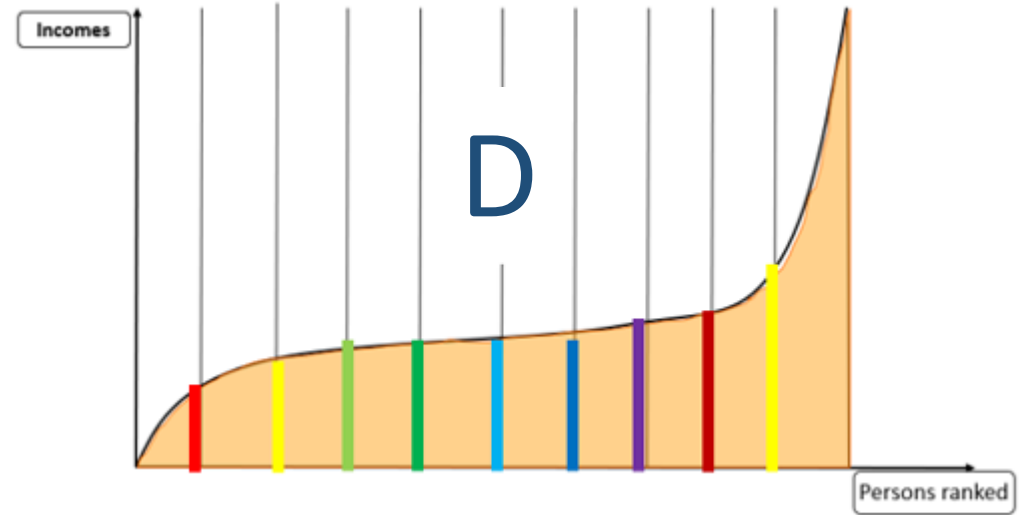
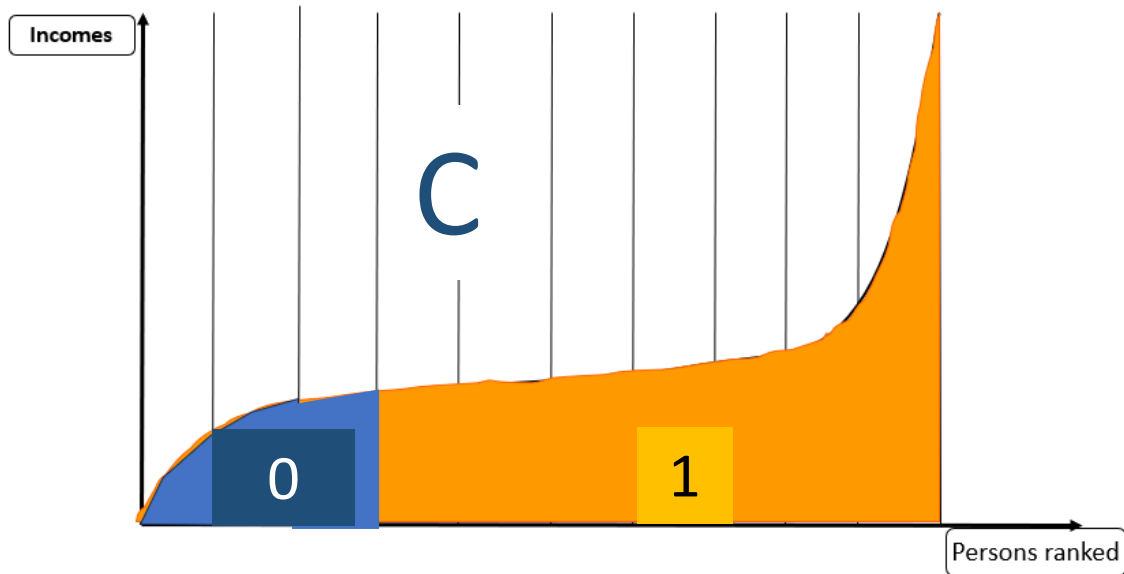
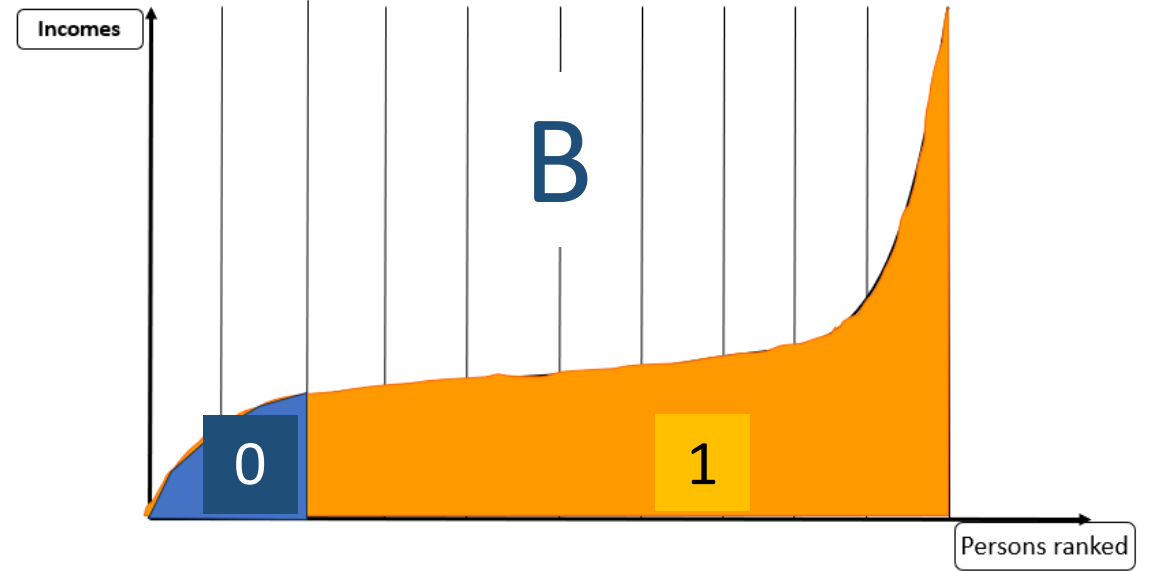
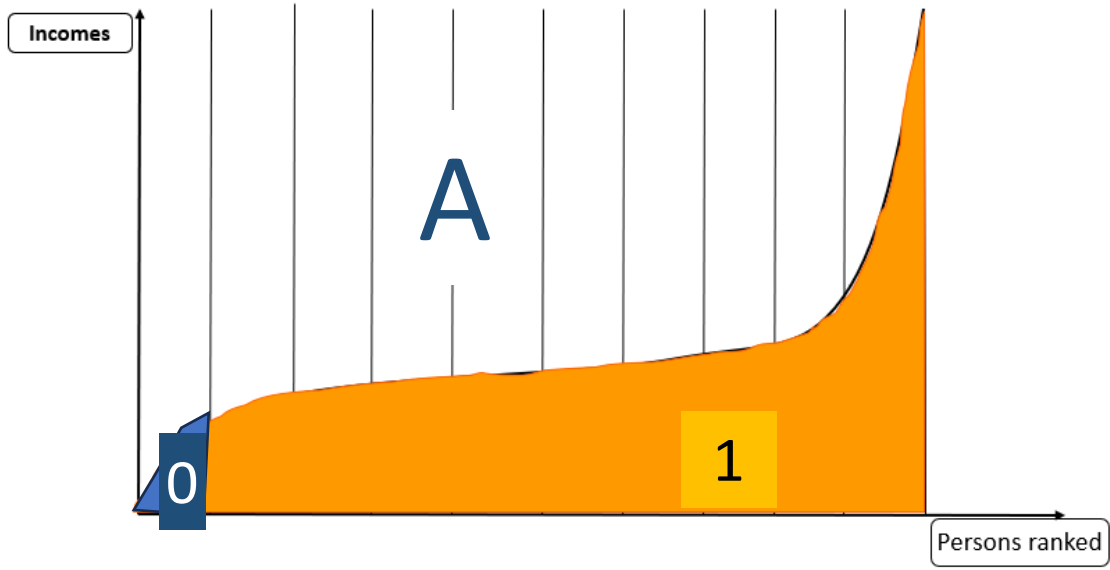
# Q1: The effect of parental higher education on incomes (Beta coefs, ref= low education, 2019)



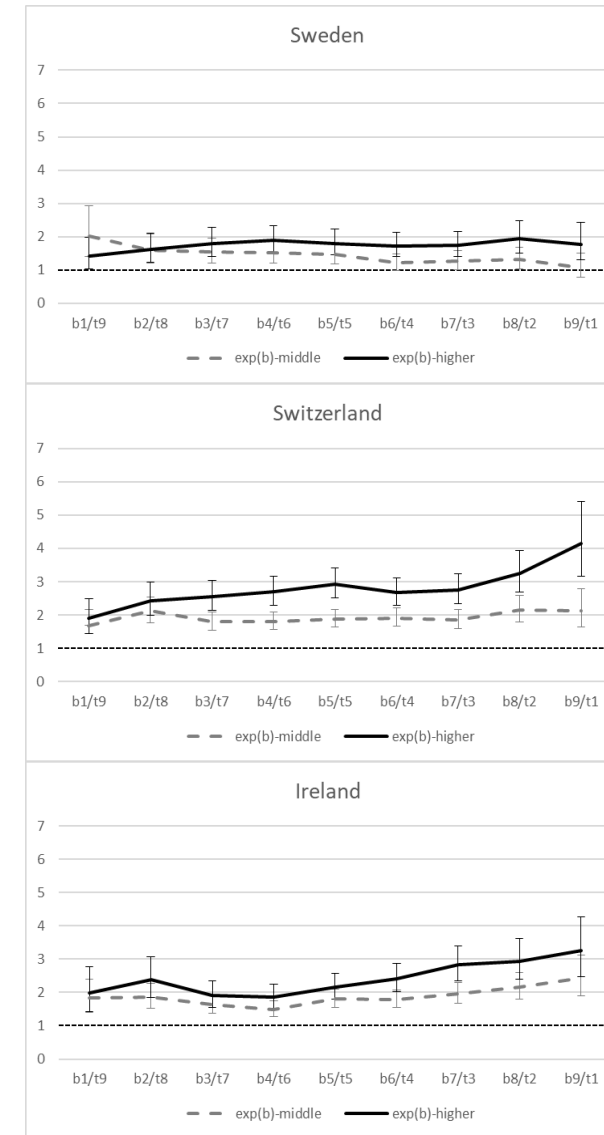
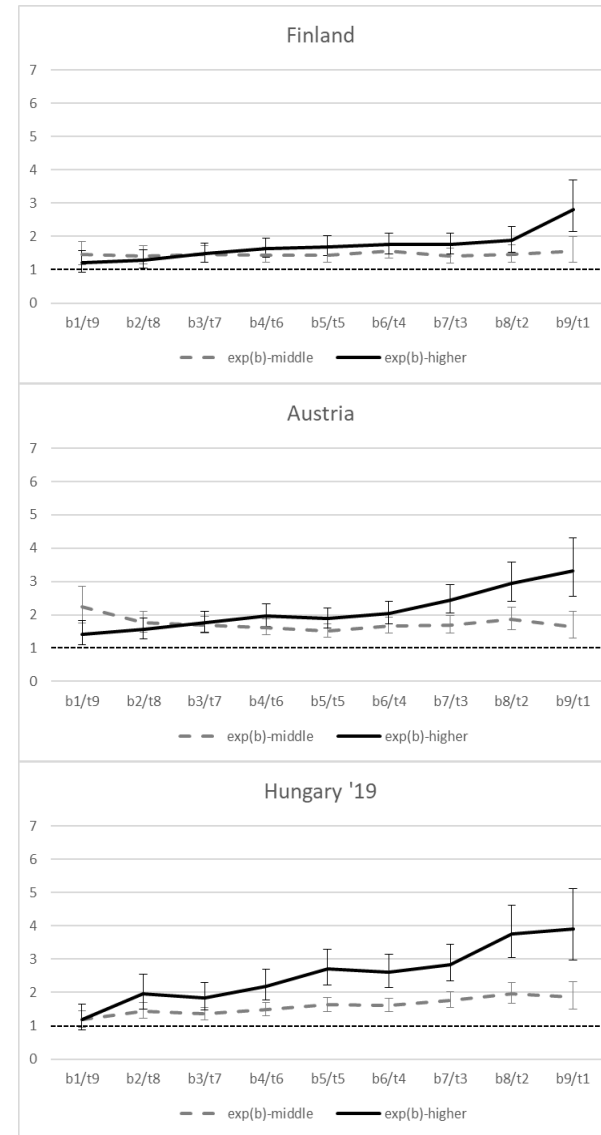
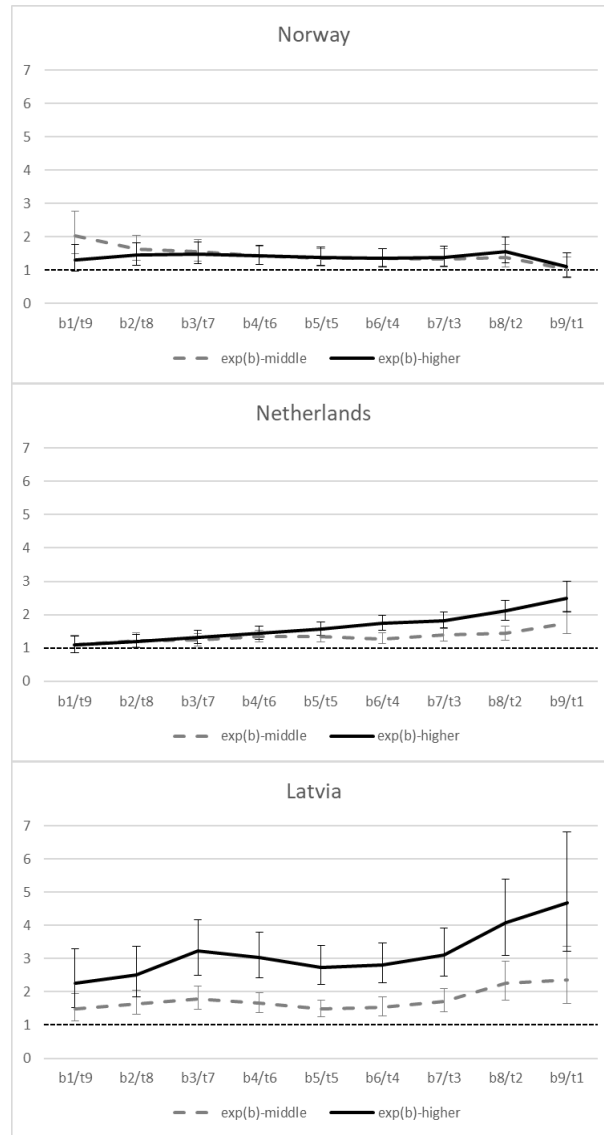
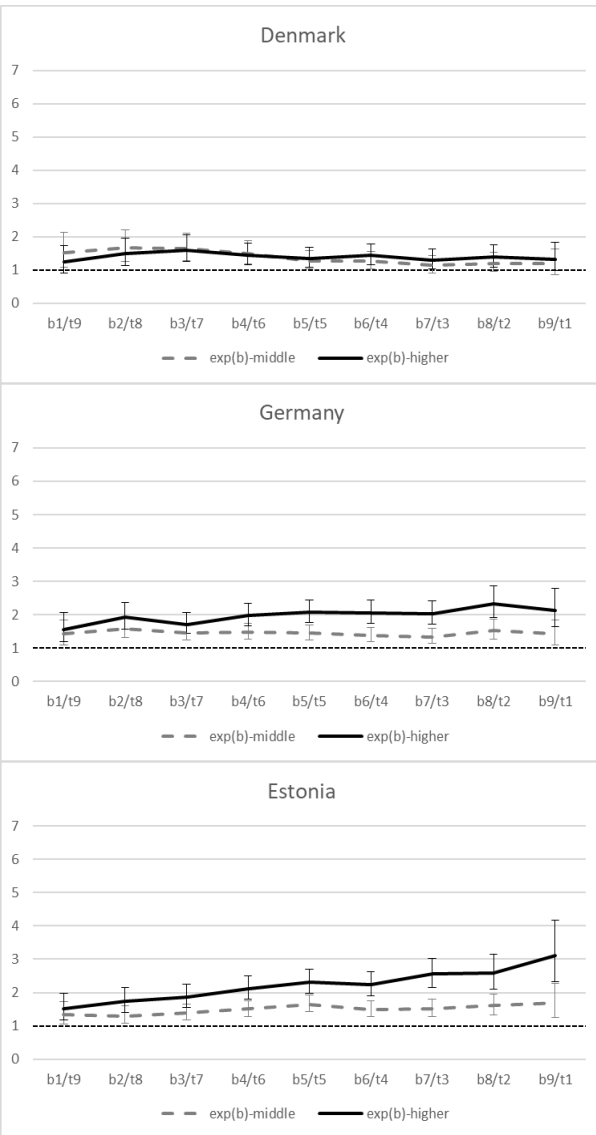


# Q2:

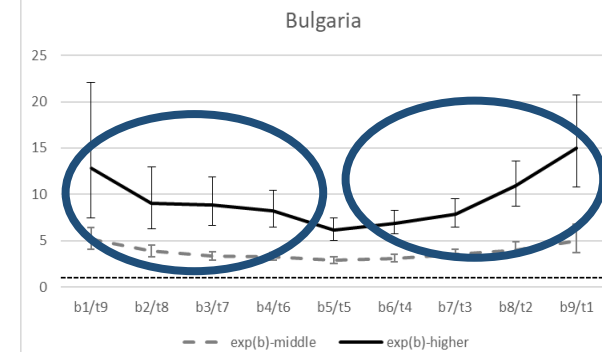
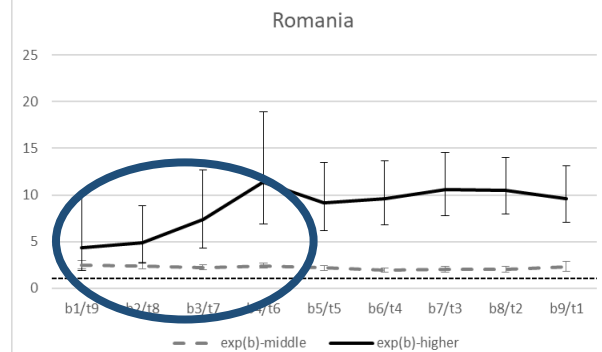
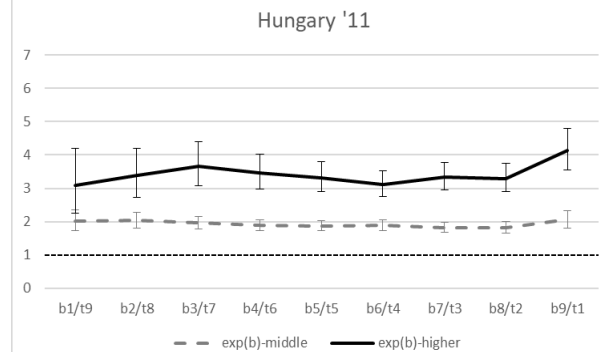
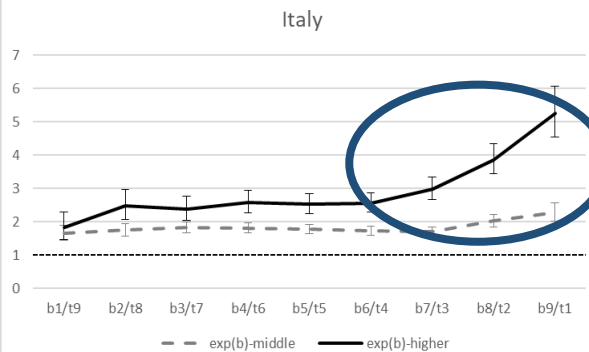
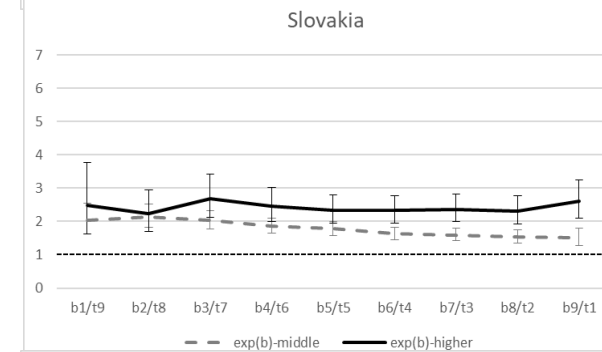
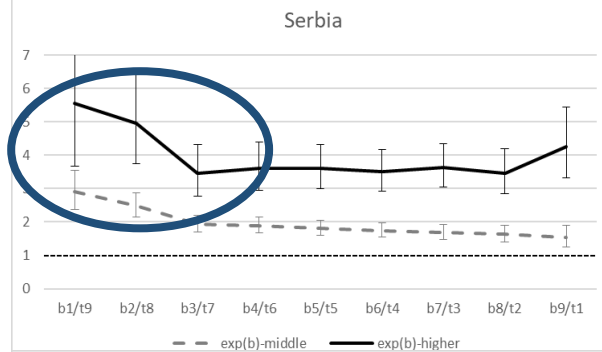
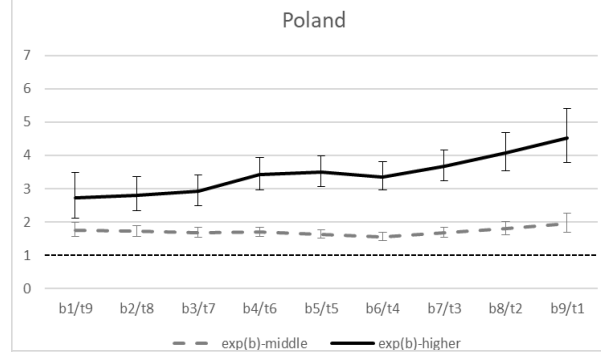
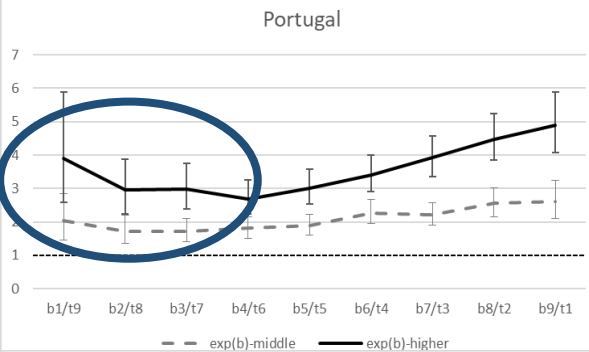
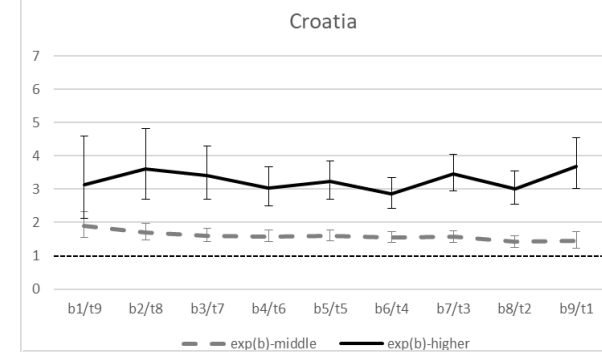
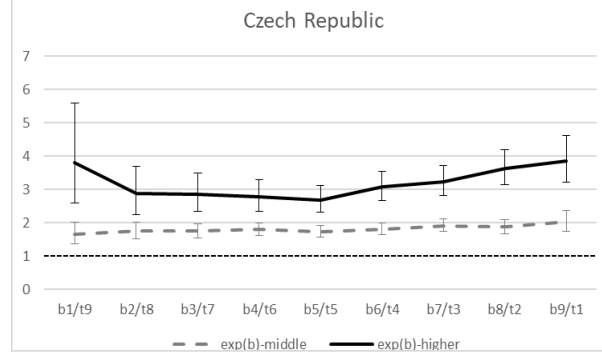
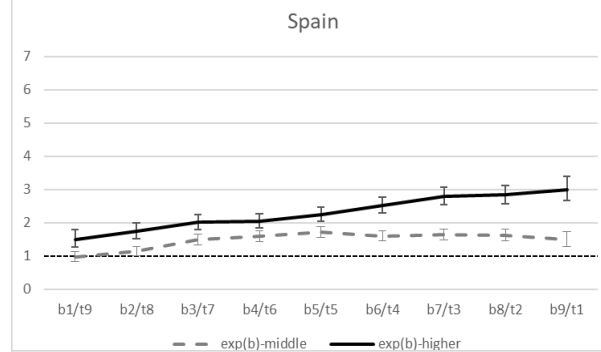
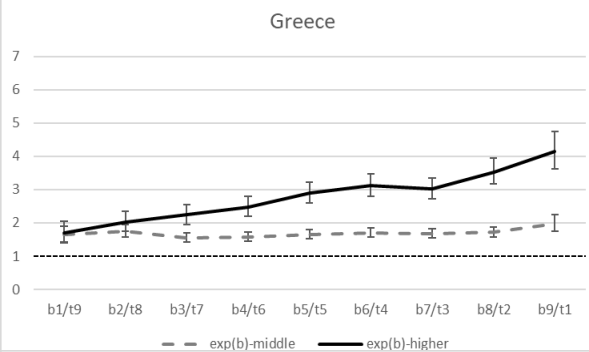
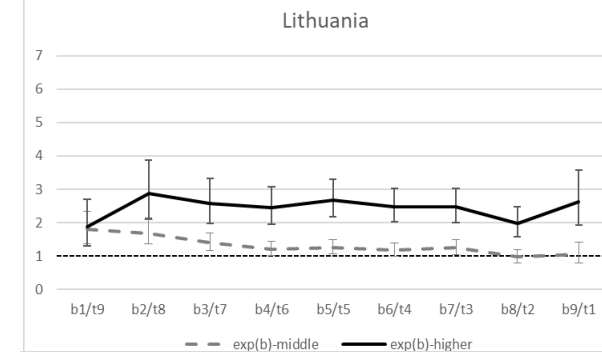
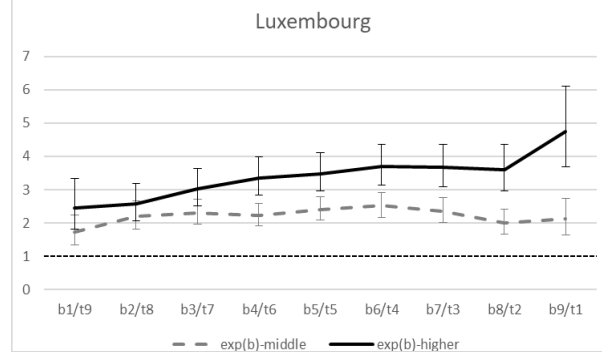
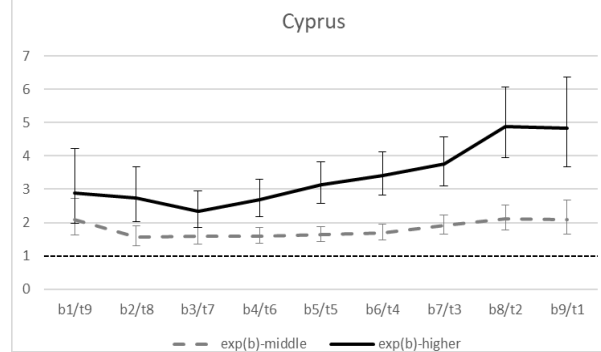
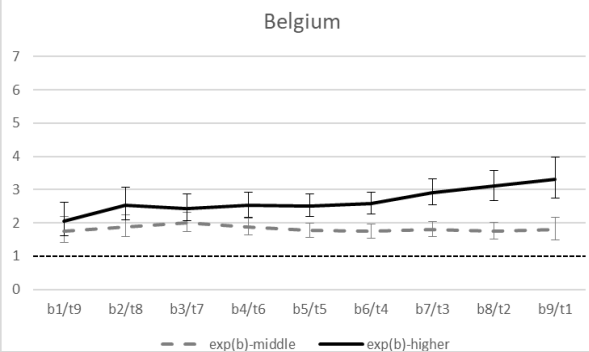
## Specifications for logistics regressions



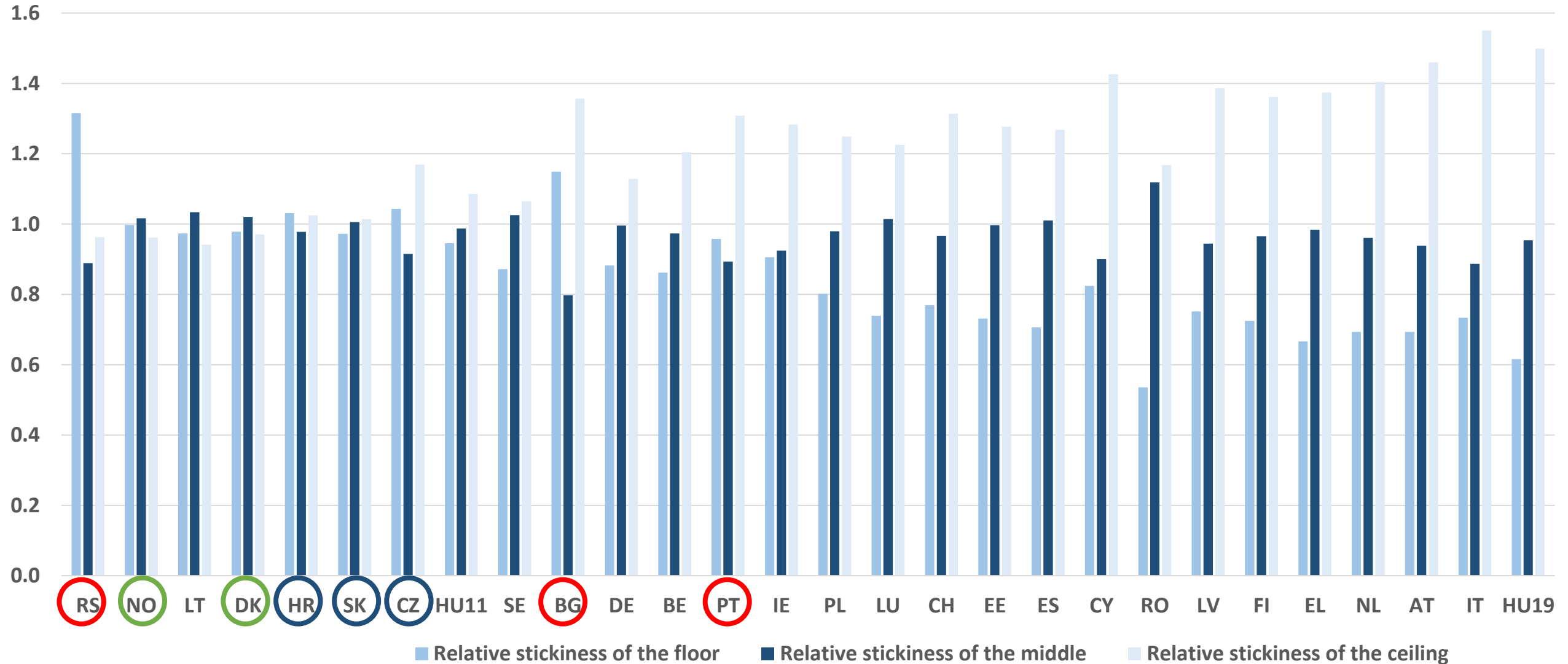
# Q2: Odds ratios for two levels of parental education (“higher” and “middle”) at different levels of the income distribution (decile cutpoints 1-9)



Values from logistic regressions controlled for “circumstance” variables.



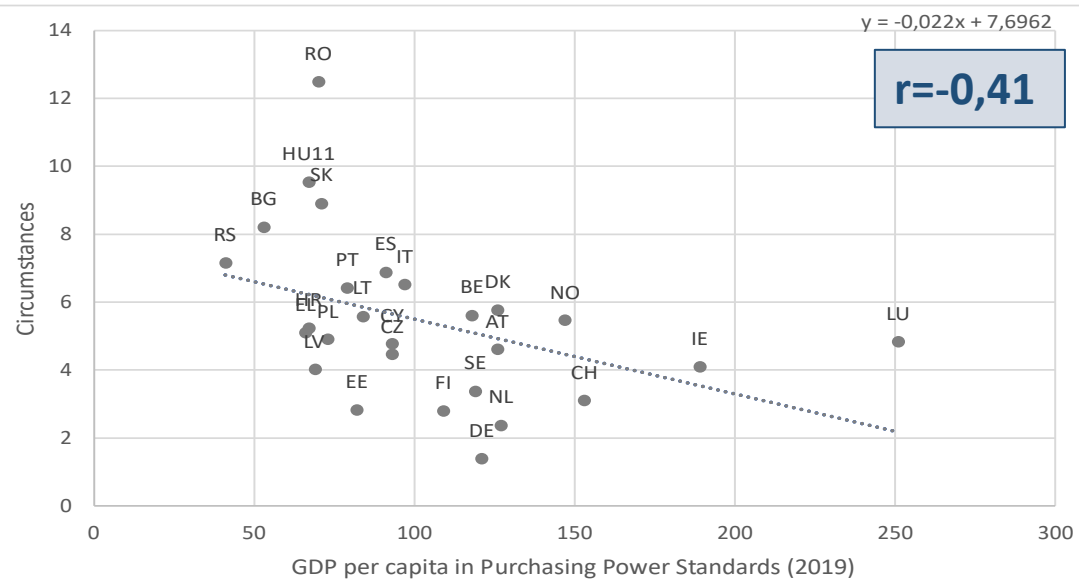
**Q2: rates of avg Exp(B) values of bottom two (stickiness of the floor), middle five (stickiness of the middle), and top two (stickiness of the ceiling) for parental education (“higher” contrasted to “lowest”) at different levels of the income distribution compared to the average of all the nine odds ratios.**



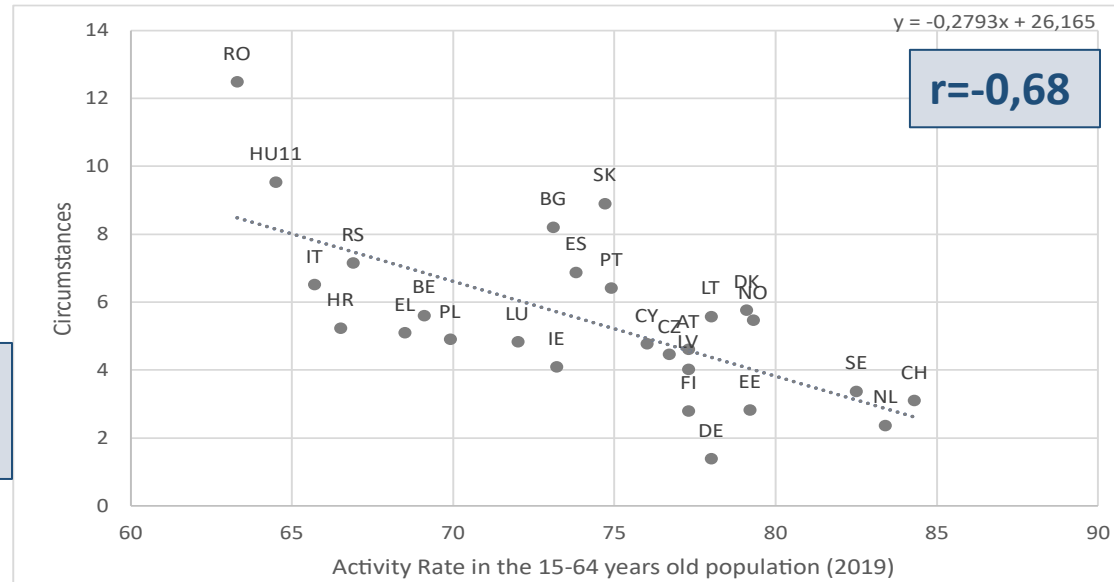
# Q3: What macro factors associate with various levels of fluidity and parental circumstances?

<b>Relative mobility is „basically the same”</b>	FJH (Featherman, Jones and Hauser 1975)	--
<b>Economic development (achievement to replace ascription)</b>	Treimann, 1970, Ganzeboom, Luijkx and Treiman 1989	Macro-economic variables: GDP per cap, pps, Activity rate
<b>Inequality, GGC</b>	Corak, 2006, Krueger, 2012, OECD, 2018, Checchi, Peragine and Serlenga, 2010	Gini, Top10%/Bottom 40%
<b>Class structure</b>	Ericson and Golthorpe 1992, Bukodi and Godthorpe, 2020	% lower classes
<b>Education attainment structure</b>	Filauro et al 2023, Checchi et al 2010, Palomino et al 2018 Palmisano et al 2022	% ISCED 0-2 % ISCED 5-8
<b>Political inclusiveness and transparency</b>		Rule of law, Control of Corruption, Voice and Accountability indices

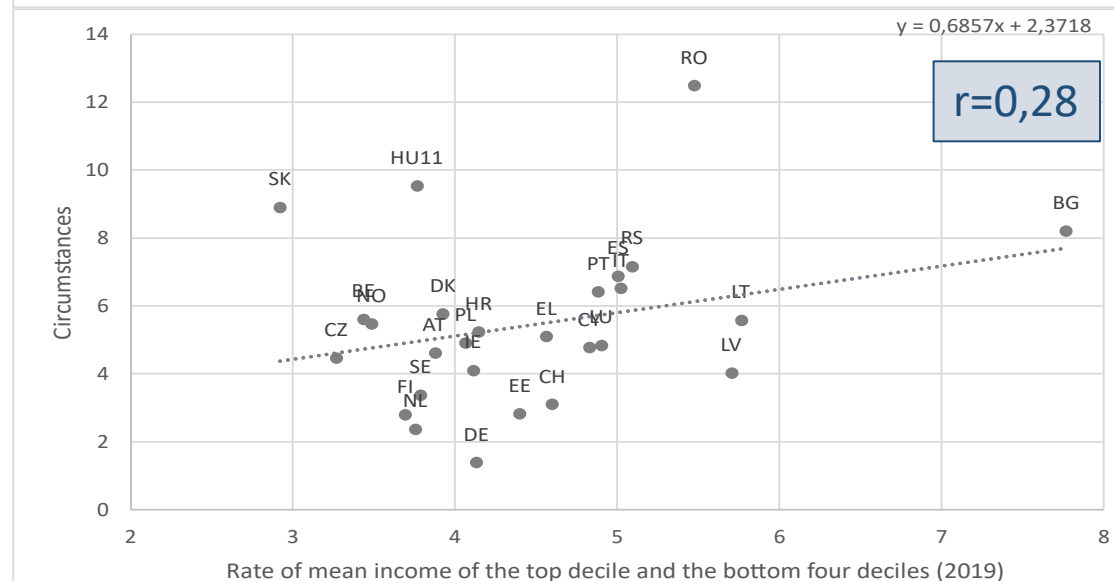
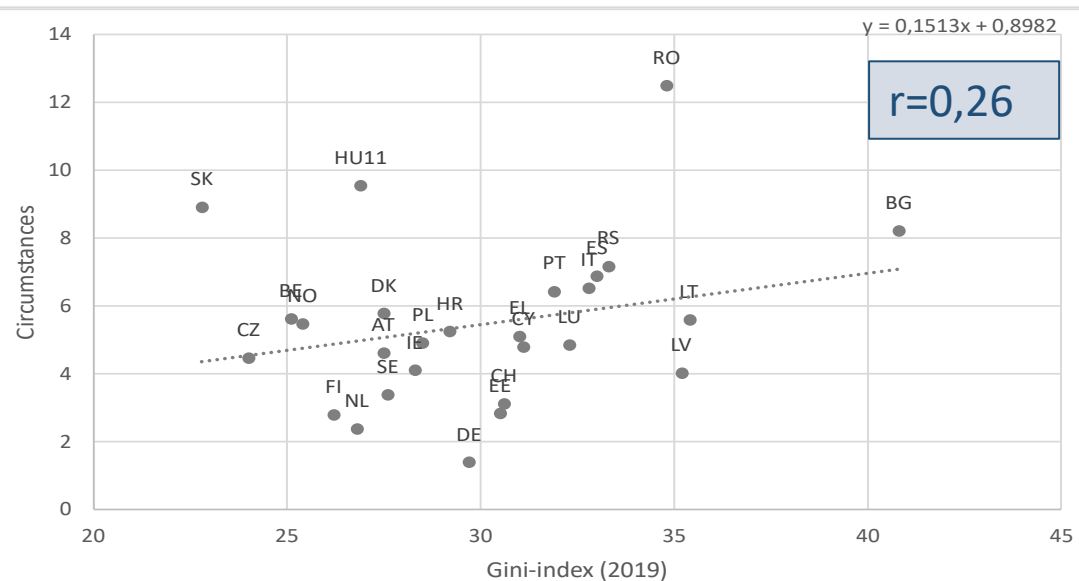
# Q3: Proportionate contribution of circumstance variables combined to inequality (vertical axis) and various macro/institutional variables (horizontal axis)

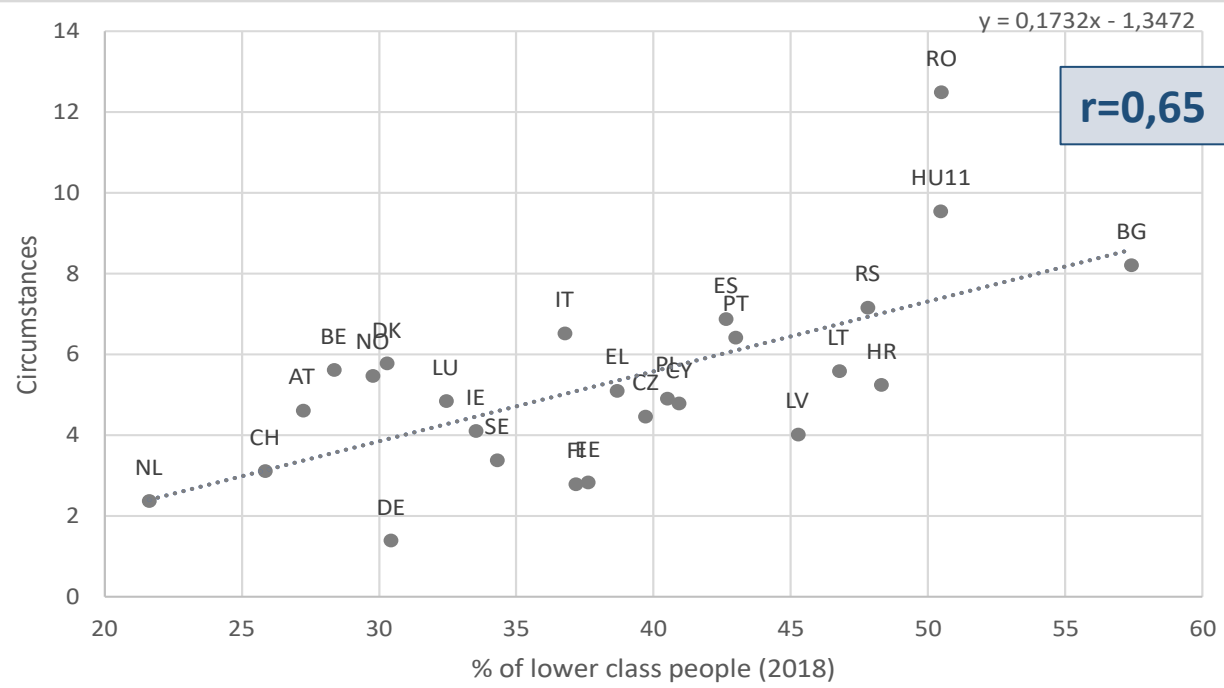
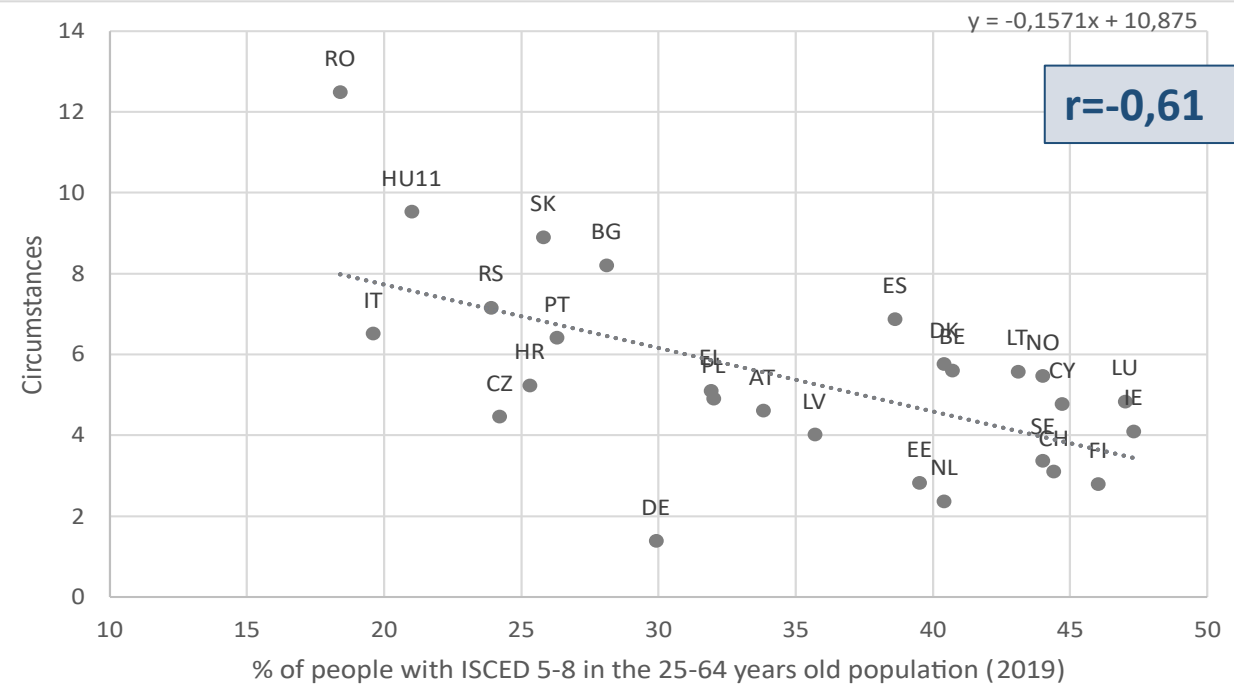
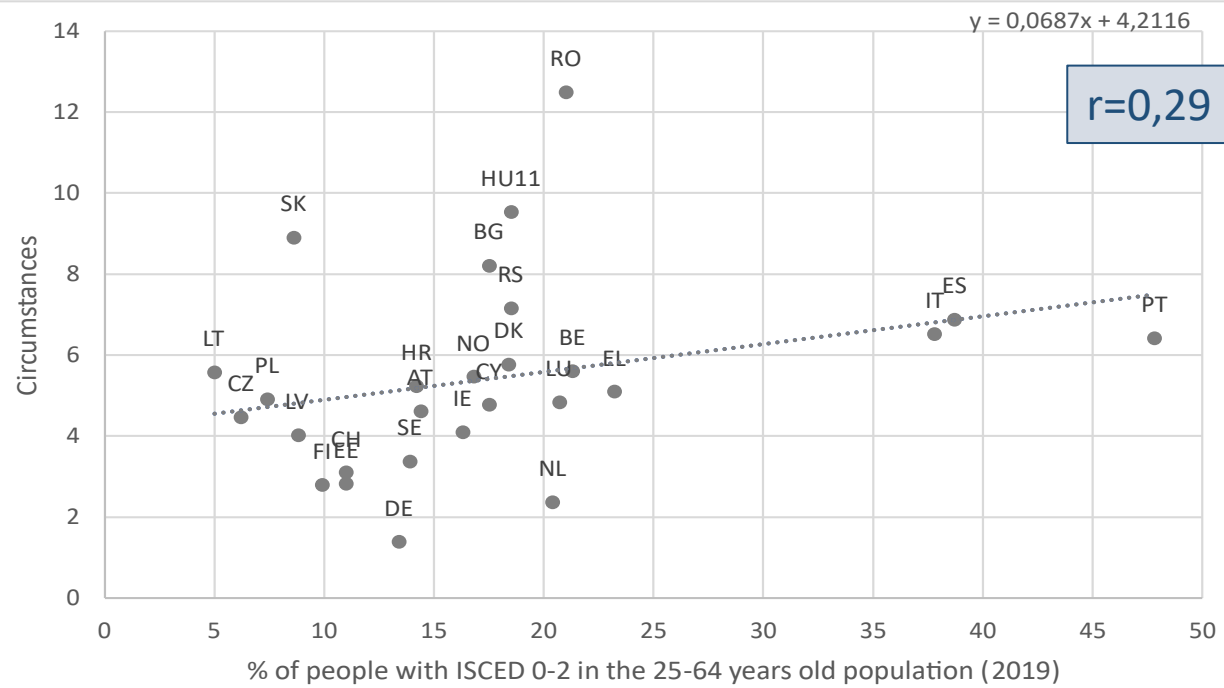


Economic development

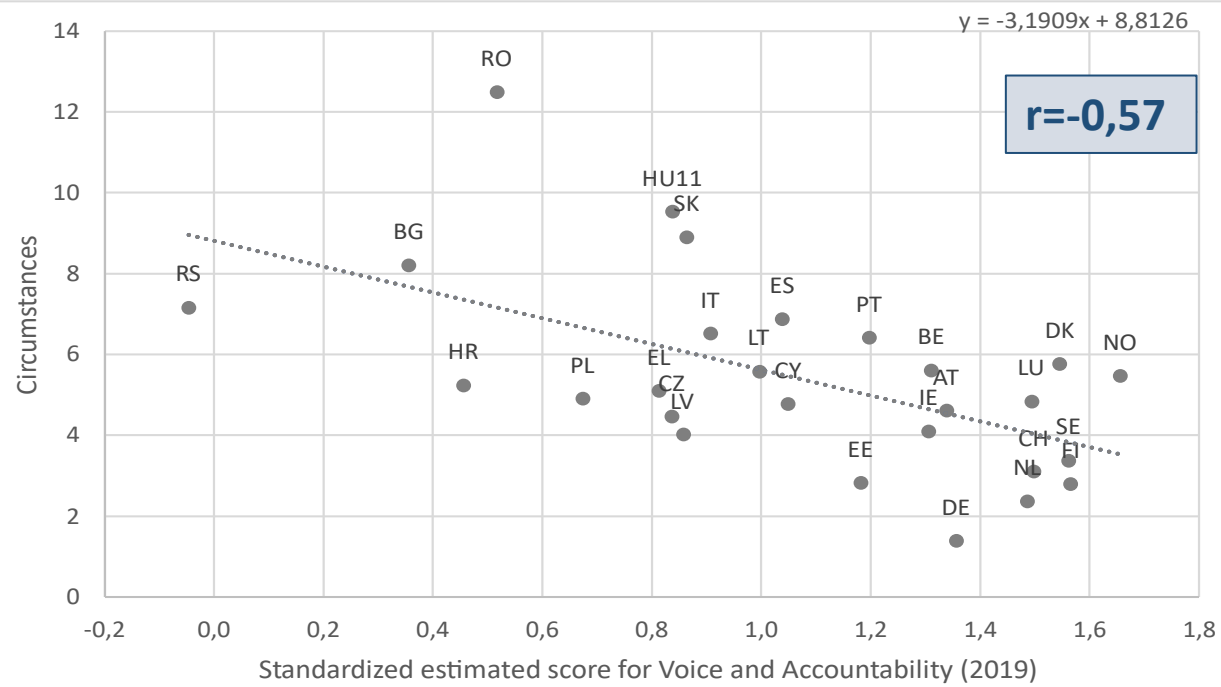
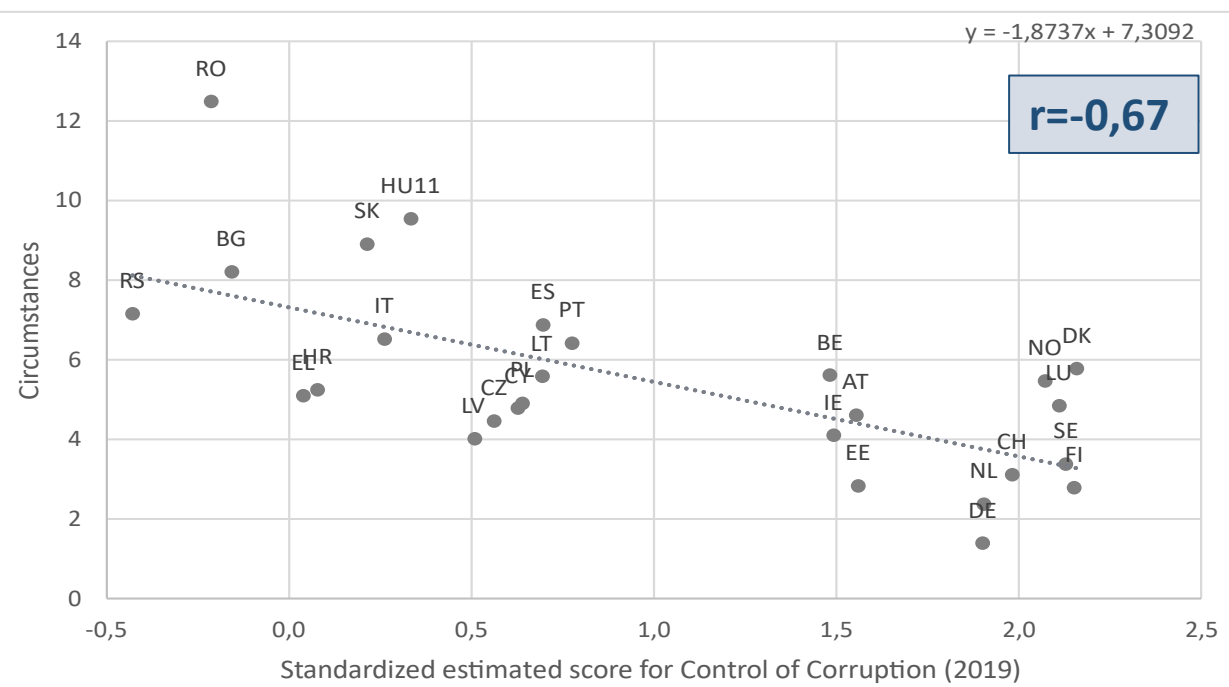
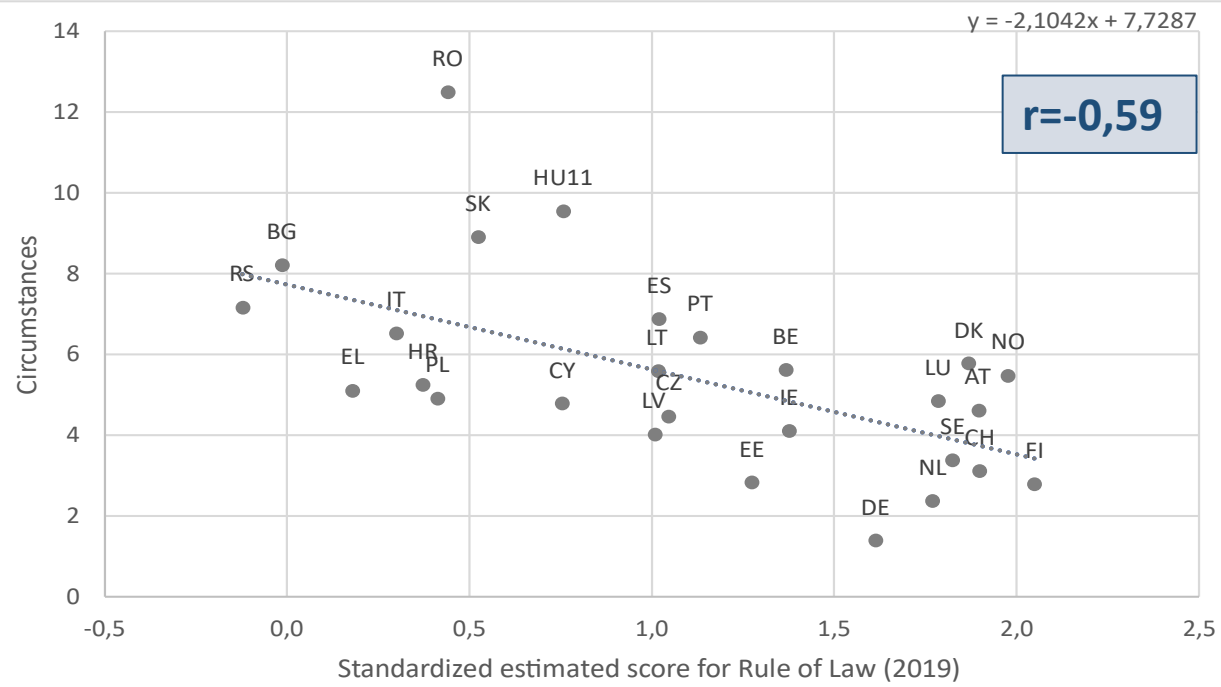


Economic inequalities





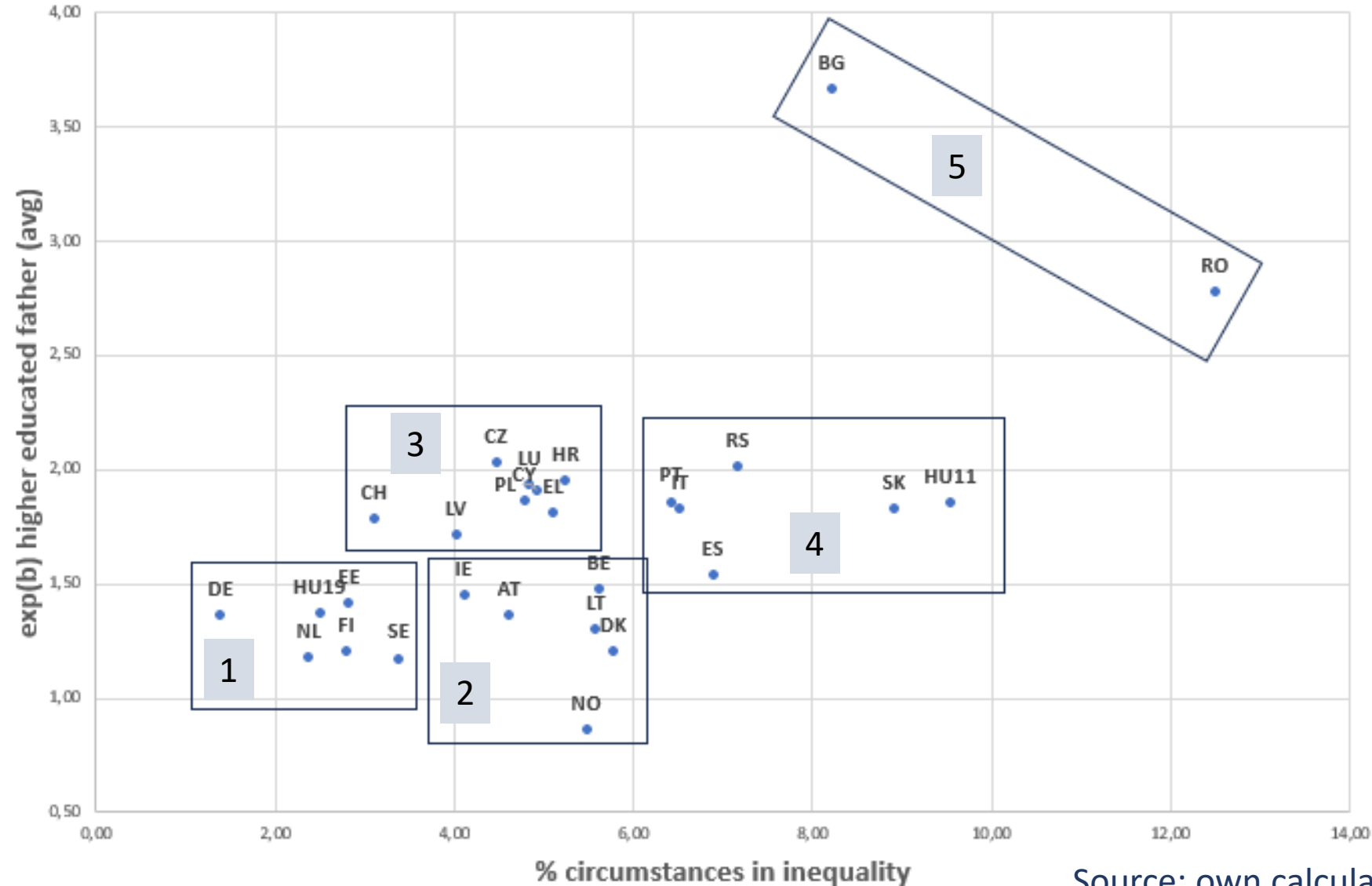
Class and education



Governance Indicators



# Summary I. Position of countries by the role of circumstances in inequality and the relative advantage of a higher educated father



1: fluid by both measure

2: low parental effect, stronger circumstances bounds

3: higher parental effects, still lower circumstances bounds

4: strong effects of circumstances

5: closed by both measures

## Summary II. Methodological lesson

Besides average effects of parental background, its variation across the distribution also makes a difference across countries.

Thank you for your attention!

Backup slides

# Q1: Comparison of fluidity regimes by Bukodi and Goldthorpe with our findings

This study (Ineqrbd % circumstances*)		Bukodi and Goldthorpe (2020) fluidity regimes		
Low role for circumstances (<4%)	EE, HU19	high fluidity set	Post-Soviet	EE, LT, LV, (RU, UA)
	FI, DE, NL, CH, SE		Post-Socialist 1	CZ, RO, SI, SK
			West-Nordic	DK, FI, (FR), IE, NO, SE, UK
Medium role for circumstances (>=4%<8%)	LV, IE, CZ, AT, CY, LU, PL, EL, HR, NO, LT, BE, DK, PT, IT, ES, RS			
Strong role for circumstances (8%<)		low fluidity set	West-Central	AT, BE, CH, DE, LU, NL
			Southern	CY, ES, GR, IT, PT
	BG, SK, HU11, RO		Post-Socialist 2	BG, HU, PL

\* % attributed to childhood circumstances and parental background combined in regression based decompositions)

# Adding up to social regimes: meritocracy as equality of opportunity

$$(1) \quad \ln Y = \beta_1 C_{obs} + \beta_2 C_{unobs} + \beta_3 P_{obs} + \beta_4 P_{unobs} + \beta_5 E + \beta_6 S + \varepsilon$$

$$(2) \quad E = \gamma_1 C_{obs} + \gamma_2 C_{unobs} + \gamma_3 P_{obs} + \gamma_4 P_{unobs} + \gamma_5 S + \vartheta$$

The three criteria of **full meritocracy** (Esping-Andersen and Wagner, 2012)

1. social origins do not directly influence the life chances of children, i.e. :  $\beta^2 = 0$  in (1)
2. social origins have no effects on educational outcomes, i.e.  $\gamma^2 = 0$  in (2)
3. educational attainment plays an increasingly strong role in dictating final outcomes, i.e.  $\beta_5$  is strong positive

Where

$Y$ : income of offspring

$C_{obs}$ ,  $C_{unobs}$ ,  $P_{obs}$ ,  $P_{unobs}$  :

observable and unobservable characteristics of the child (C) and parent, respectively,

$E$ : education

$S$ : other societal factors (WS, child programmes, etc)

$E$ : education of the offspring

and  $\theta$  is the error term

# The methodological status and definitions of explanatory variables in models

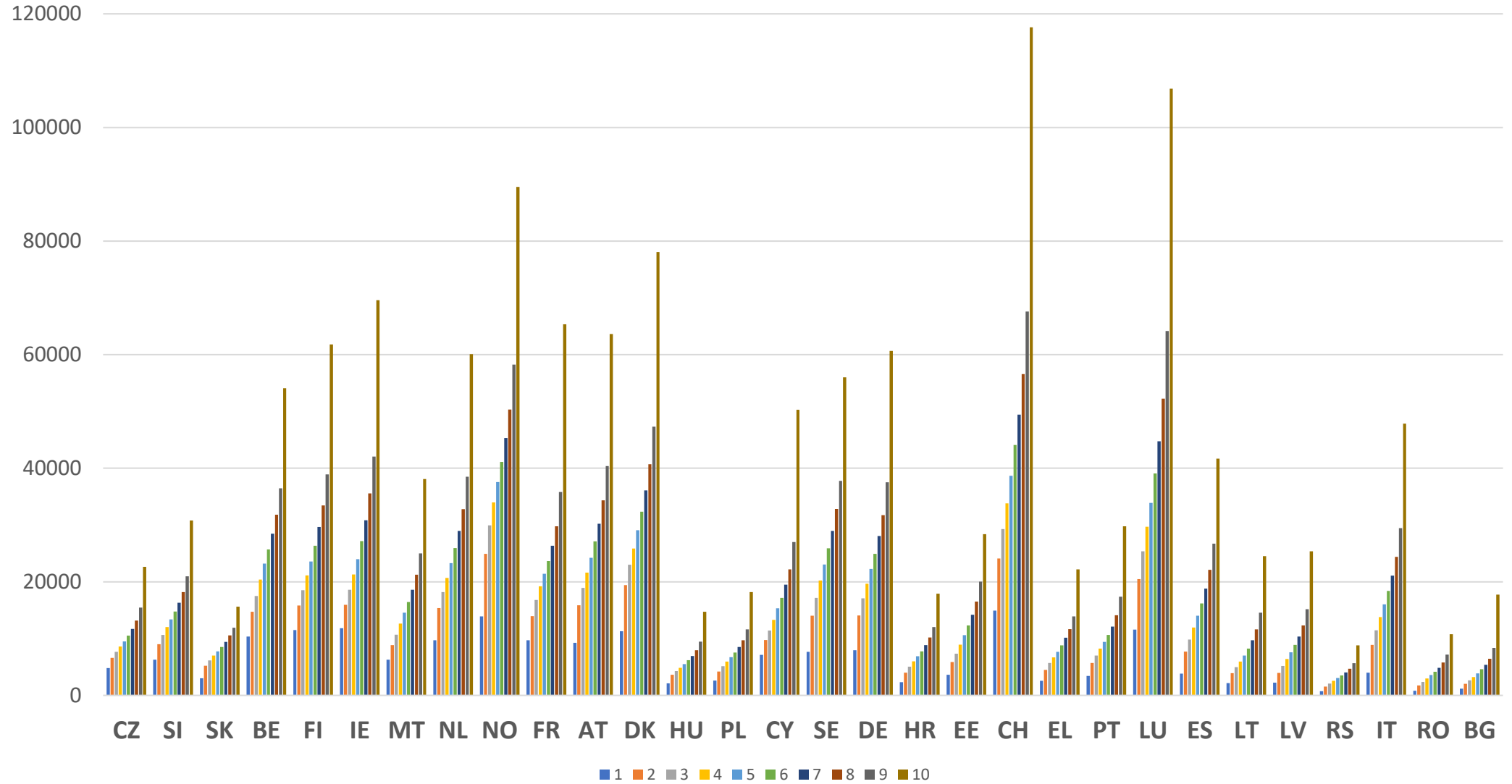
	Category	Variable name	Coding and reference categories
Circumstances	childhood personal circumstances	sex,	female (ref.), male
		age5,	25-29 (ref.), 30-34, 35-39, 40-44, 45-49, 50-54, 55-59
		parent missing,	both parents missing (ref.), one missing parent, no missing parents
		siblings,	0 (ref.), 1-2, 3+
		degurba_14	city (ref.), town, rural
parental background circumstances	parental education	low – ISCED 0-2 (ref.), middle – ISCED 3-4, higher – ISCED 5-8	
	parental financial situation	lower (ref.), lower-middle, upper-middle, upper	
Efforts	Own education attainment	lower – ISCED 0-2 (ref.), middle – ISCED 3-4, higher – ISCED 5-8	
	Own labour market position	inactive (ref.), employed, self-employed	

# Literature

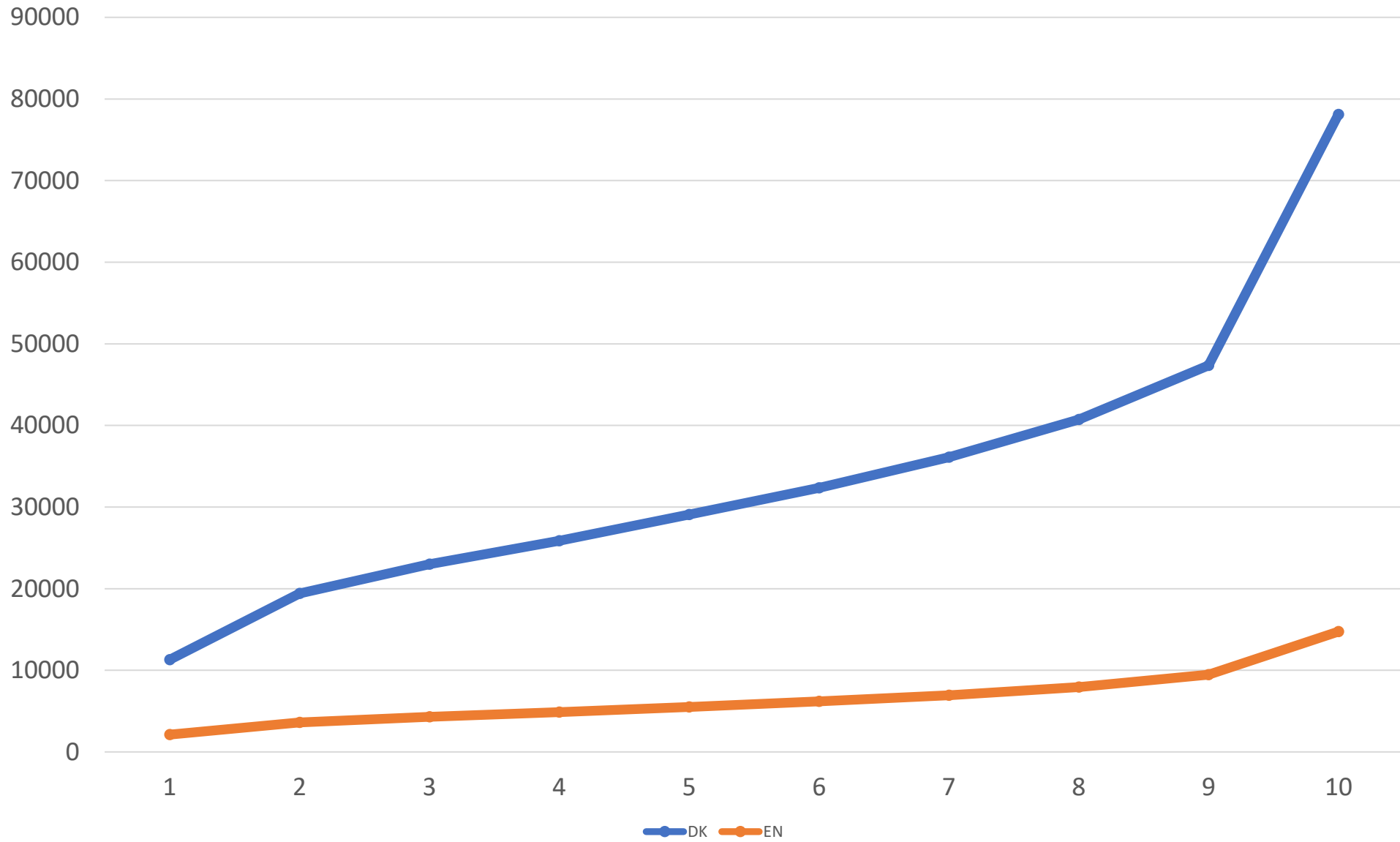
- High IOp: Bulgaria, Romania, Poland, Greece, Italy, Portugal, Spain, Croatia, Serbia (Andreoli et al., 2021; Carranza, 2021)
- Low IOp: Sweden, Norway, Iceland, Denmark, Austria, Germany, Switzerland, Netherlands (Andreoli et al., 2021; Carranza, 2021)
- High IOp: Belgium, Romania, Serbia, Lithuania, Latvia, Portugal, Greece (Csathó, 2021)
- Low IOp: Switzerland, Germany, Austria, Belgium (Nordic countries without age) (Csathó, 2021)
- High earnings mobility: Denmark, Norway, Finland, Sweden (OECD, 2018:195)
- Low earnings mobility: Luxembourg, Hungary, Germany, France, Austria, Switzerland (OECD, 2018:195)
- High impact of origin on the probability of obtaining a degree: Portugal, Poland, Slovenia, Hungary, Spain, Germany (Róbert, 2018)
- Low impact of origin on the probability of obtaining a degree: Sweden, Finland, Denmark, UK (Róbert, 2018)
- High importance of wealth transfer: Austria, Germany, Ireland (Medgyesi, 2022)
- Low importance of wealth transfer: Hungary, Finland, Greece (Medgyesi, 2022)
- High importance of economic capital: Bulgaria, Romania, Serbia, Spain, Italy (Csathó, 2021)
- Low importance of economic capital: Austria, Slovenia, Switzerland, Sweden, Latvia, Czech Republic (Csathó, 2021)
- High importance of cultural capital: Bulgaria, Romania, Serbia, Latvia, Lithuania (Csathó, 2021)
- Low importance of cultural capital: Austria, Netherlands, Switzerland, Norway, Finland, Denmark (Csathó, 2021)

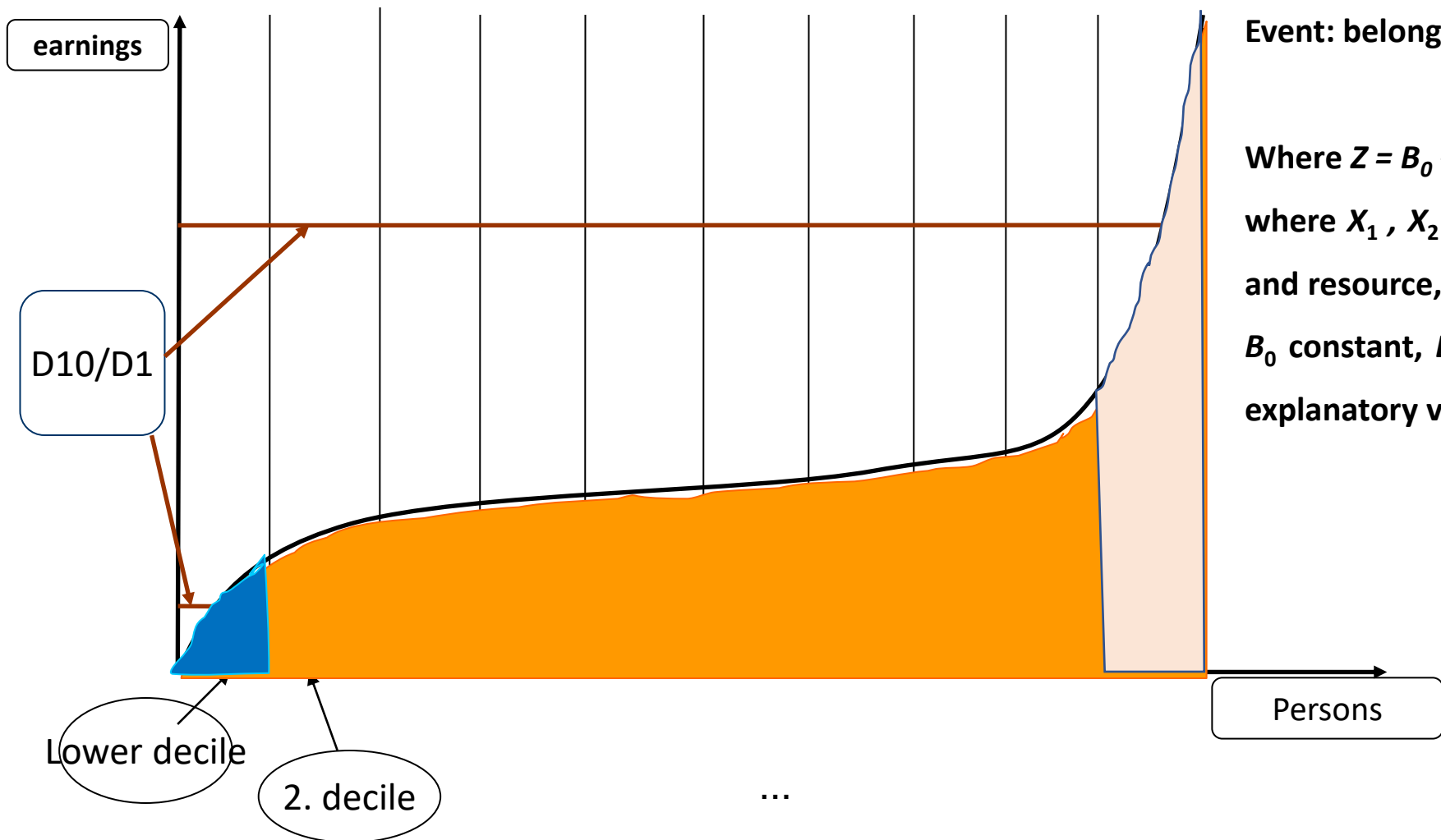


Variable on the left:  
Distribution of material index (eq, hh, disp income ) among persons in different countries  
EUR, annual, sorted by country: D10/D1



## Two examples: income distribution: DK and HU





**The logic of logistic models:**

**Event: belonging to a given decile/others**

$$\text{Prob(event)} = 1/(1 + e^{-Z})$$

**Where  $Z = B_0 + B_1 X_{11} + B_2 X_{22} + \dots + B_k X_{kk}$ ,**

**where  $X_1, X_2, \dots, X_k$  are explanatory variables (origin and resource, etc.)**

**$B_0$  constant,  $B_1, \dots, B_k$ , and the coefficients of each explanatory variable are**

Figure 8. Comparing the share of inequality explained by circumstances (this study) to relative IOP (by Filauro et al, 2023)

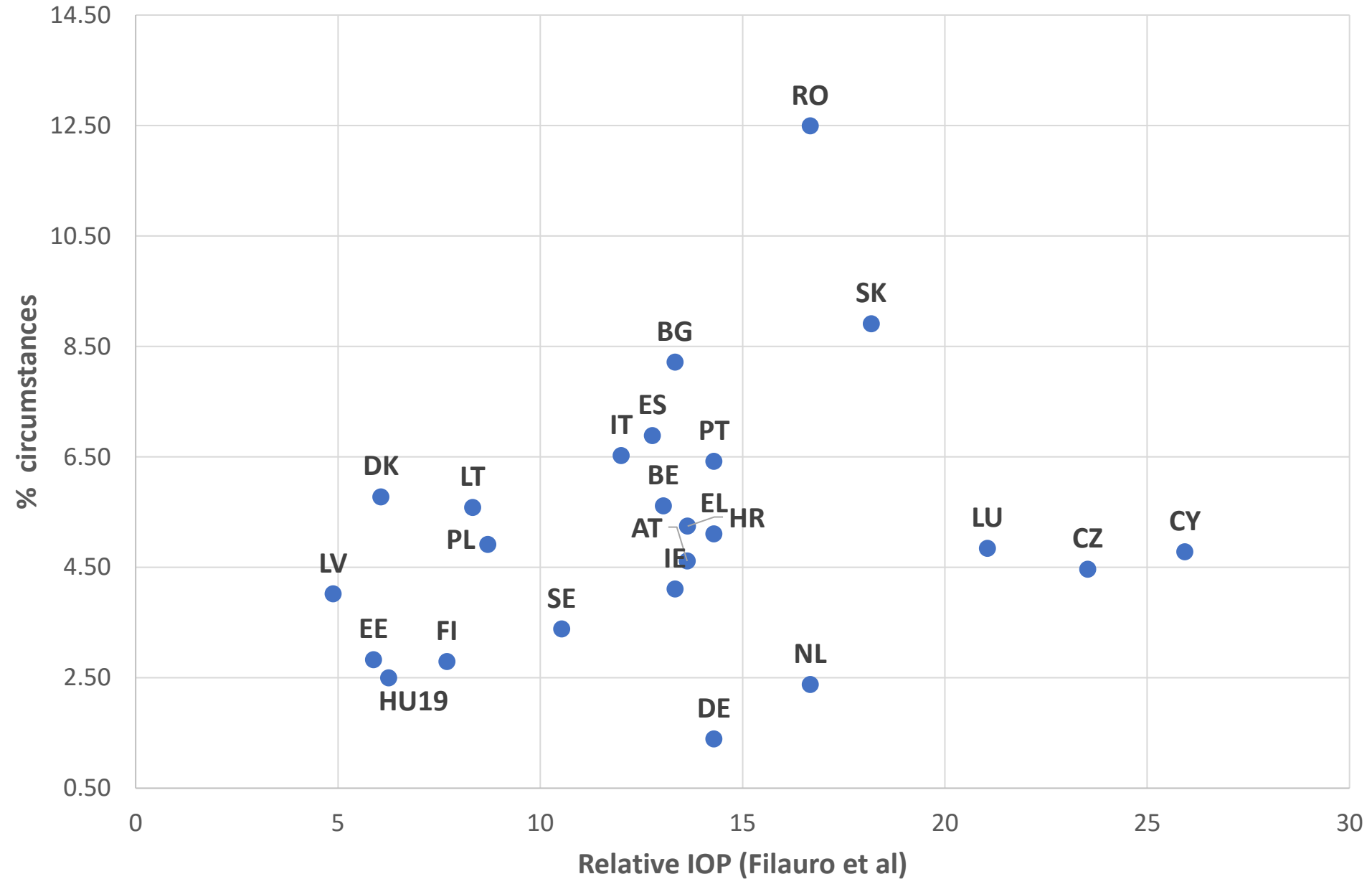
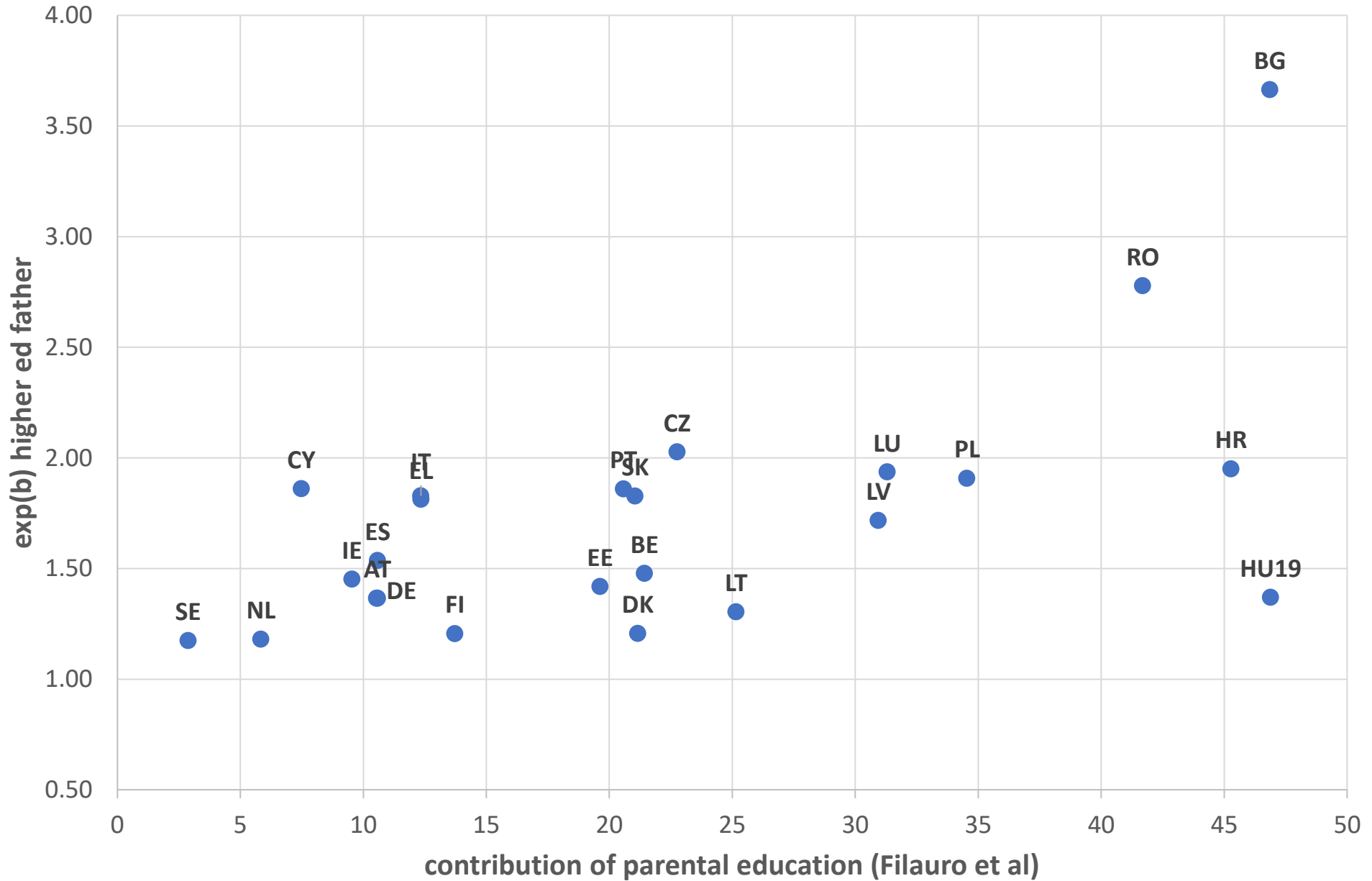


Figure 9. Comparing the role of parental education (average odds ratios from logistic regressions at various decile cutpoints in this study and the contribution of parental education to relative IOP (by Filauro et al, 2023)



**Table A3. Pearson-correlation between the different structural factors in a country and the level of different measurements of absolute and relative levels of stickiness**

		Macroeconomy		Inequality		Class structure: % lower classes	Education attainment structure				Political inclusiveness and transparency					
		GDP	Activity rate	Gini	Top10/Bottom40		ISCED 0-2 rate		ISCED 5-8 rate		Rule of law		Corruption		Voice	
		2019	2019	2019	2019	2018	2000	2019	2000	2019	2000	2019	2000	2019	2000	2019
<b>Circumstances</b>		<b>-0,41</b>	<b>-0,68</b>	0,26	0,28	<b>0,65</b>	0,22	0,29	<b>-0,48</b>	<b>-0,61</b>	<b>-0,53</b>	<b>-0,59</b>	<b>-0,58</b>	<b>-0,67</b>	<b>-0,46</b>	<b>-0,57</b>
<b>Relative stickiness at...</b>	parent. educ.															
<b>Floor</b>	middle	-0,23	-0,05	0,02	0,06	0,22	-0,49	<b>-0,39</b>	0,31	-0,11	-0,35	-0,16	-0,25	-0,16	<b>-0,40</b>	-0,26
<b>Middle</b>	middle	0,36	0,00	-0,37	<b>-0,45</b>	-0,32	0,10	0,17	0,11	0,19	0,36	0,34	0,35	0,33	0,37	0,35
<b>Ceiling</b>	middle	-0,04	0,05	0,27	0,29	0,02	<b>0,41</b>	0,28	<b>-0,40</b>	-0,03	0,10	-0,09	-0,01	-0,10	0,14	0,00
<b>Floor</b>	high	-0,26	-0,06	0,00	0,08	0,34	-0,17	-0,14	0,12	-0,20	<b>-0,43</b>	-0,29	-0,35	-0,26	<b>-0,48</b>	<b>-0,38</b>
<b>Middle</b>	high	0,19	0,03	-0,26	-0,35	-0,19	-0,31	-0,19	0,25	0,16	0,20	0,32	0,22	0,28	0,27	0,30
<b>Ceiling</b>	high	0,08	0,03	0,23	0,25	-0,17	<b>0,44</b>	0,31	-0,34	0,05	0,24	0,00	0,14	0,00	0,23	0,11
<b>Absolute stickiness at...</b>	parent. educ.															
<b>Average</b>	middle	-0,14	-0,32	<b>0,56</b>	<b>0,66</b>	<b>0,51</b>	0,21	0,15	<b>-0,42</b>	-0,32	-0,37	<b>-0,46</b>	<b>-0,41</b>	<b>-0,43</b>	-0,37	<b>-0,46</b>
<b>Floor</b>	middle	-0,25	-0,30	<b>0,50</b>	<b>0,61</b>	<b>0,54</b>	-0,02	-0,04	-0,24	-0,34	<b>-0,48</b>	<b>-0,48</b>	<b>-0,47</b>	<b>-0,45</b>	<b>-0,51</b>	<b>-0,53</b>
<b>Middle</b>	middle	-0,05	-0,38	<b>0,51</b>	<b>0,61</b>	<b>0,48</b>	0,25	0,20	<b>-0,46</b>	-0,32	-0,32	<b>-0,42</b>	-0,38	<b>-0,40</b>	-0,32	<b>-0,42</b>
<b>Ceiling</b>	middle	-0,14	-0,21	<b>0,57</b>	<b>0,67</b>	<b>0,43</b>	0,30	0,22	<b>-0,44</b>	-0,25	-0,25	<b>-0,39</b>	-0,32	-0,37	-0,23	-0,36
<b>Average</b>	high	-0,36	<b>-0,48</b>	<b>0,65</b>	<b>0,71</b>	<b>0,69</b>	0,13	0,10	<b>-0,42</b>	<b>-0,49</b>	<b>-0,58</b>	<b>-0,60</b>	<b>-0,62</b>	<b>-0,62</b>	<b>-0,55</b>	<b>-0,64</b>
<b>Floor</b>	high	<b>-0,41</b>	-0,37	<b>0,61</b>	<b>0,71</b>	<b>0,70</b>	0,09	0,04	-0,30	<b>-0,44</b>	<b>-0,62</b>	<b>-0,62</b>	<b>-0,62</b>	<b>-0,60</b>	<b>-0,62</b>	<b>-0,68</b>
<b>Middle</b>	high	-0,33	<b>-0,52</b>	<b>0,60</b>	<b>0,63</b>	<b>0,66</b>	0,10	0,09	<b>-0,42</b>	<b>-0,50</b>	<b>-0,56</b>	<b>-0,56</b>	<b>-0,61</b>	<b>-0,59</b>	<b>-0,53</b>	<b>-0,61</b>
<b>Ceiling</b>	high	-0,32	<b>-0,42</b>	<b>0,68</b>	<b>0,75</b>	<b>0,63</b>	0,19	0,15	<b>-0,43</b>	<b>-0,43</b>	<b>-0,49</b>	<b>-0,56</b>	<b>-0,54</b>	<b>-0,57</b>	<b>-0,46</b>	<b>-0,57</b>

**Figure A1. The average of the bottom two (stickiness of the floor), middle five (stickiness of the middle), and top two (stickiness of the ceiling) odds ratios for parental education (“middle” contrasted to “lowest”) at different levels of the income distribution compared to the average of all the nine odds ratios. Values from logistic regressions controlled for “circumstance” variables**

