

Questions

Does educational assortative mating contribute to household income inequality?

Do these contributions differ across countries and change over time?

So far, studies concluded that there is little association between changes in educational homogamy and income inequality (on DK, US, UK), hypotheses:

- Changes in educational homogamy not big enough
- Education not strongly related to household income

Data

Luxembourg Income Studies for 21 countries

Two time periods spaced at least one decade apart

Equivalent Disposable Household Income Inequality

Households comprised of singles or couples living with or without children; heads of households aged 30-64

Education: ISCED 1-2 / ISCED 3-4 / ISCED 5-6

Sample sizes in range [4251, 8852]

Method

'Counterfactual' simulations

Given country-period educational distribution what would estimated income inequality be in case of:

a) minimal homogamy b) maximal homogamy

We divide households into groups j according to the combined levels of education of opposite-sex couples (singles form separate groups according to sex and education). If p_j is a group's share in the population, x_j its average income, and T_j inequality in income within that group, the Theil-index can be estimated as: $T = \sum_j p_j \frac{x_j}{\sum_j x_j p_j} \ln \left(\frac{x_j}{\sum_j x_j p_j} \right) + \sum_j p_j \frac{x_j}{\sum_j x_j p_j} T_j$

We estimate 'counterfactual' values of p_j . *Minimal homogamy*: partners' levels of education independent (multiplying for each cell of 4x4 population share of table row total with population share of column total). *Maximum homogamy*: We first maximize shares on the diagonal of the table, by taking the minimum value between row and column total. Subsequently only one set of possible shares of groups remains. The resulting p_j are combined with observed values of x_j and T_j to calculate 'counterfactual' household income inequality.

Example

Stylized Example Spain 2013

Actual Distribution of Households across Types				Average Household Income for Household Types			
Her education	His education			Her education	His education		
	Low	Middle	High		Low	Middle	High
Low	27.8%	7.1%	5.4%	Low	16075	19691	22205
Middle	8.6%	7.0%	5.5%	Middle	17939	19832	28714
High	7.7%	8.1%	22.9%	High	21517	26328	33140

Simulated Distribution: Minimal Homogamy				Simulated Distribution: Maximum Homogamy			
Her education	His education			Her education	His education		
	Low	Middle	High		Low	Middle	High
Low	17.8%	8.9%	13.6%	Low	40.3%	0%	0%
Middle	9.2%	4.6%	7.0%	Middle	0%	21.1%	0%
High	17.1%	8.6%	13.1%	High	3.8%	1.1%	33.8%

Simulated Theil Household Income Inequality: 0.222		Simulated Theil Household Income Inequality: 0.231	
(0.047 between groups / 0.175 within groups)		(0.055 between groups / 0.176 within groups)	
Change in Inequality if Homogamy Minimal: -3.6%		Change in Inequality if Homogamy Maximum: +4.1%	

Results

Over last few decades, educational homogamy mostly declined

Table 2. Changes in income inequality and the association between partners' educations

Country	First Year	Last Year	% Change	First Year	Last Year	% Change	First year	Last year
	Theil	Theil	in Theil	Tau-b	Tau-b	Tau-b	OR College	OR College
Austria ('87/'04)	0.084	0.127	51.2	0.531	0.400	-24.7	36.7	7.3
Belgium ('85/'97)	0.091	0.105	15.4	0.604	0.549	-9.1	17.5	11.7
Czech Rep. ('92/'13)	0.081	0.144	77.8	0.403	0.426	5.7	15.9	9.8
Denmark ('87/'10)	0.107	0.144	34.6	0.386	0.375	-2.8	8.3	5.8
Estonia ('00/'10)	0.266	0.214	-19.6	0.420	0.414	-1.4	7.0	7.2
Finland ('95/'13)	0.094	0.124	31.9	0.363	0.335	-7.7	5.7	4.4
France ('78/'10)	0.209	0.177	-15.3	0.364	0.454	24.7	18.4	10.0
Germany ('94/'13)	0.145	0.195	34.5	0.364	0.362	-0.5	5.5	5.3
Greece ('95/'10)	0.235	0.224	-4.7	0.626	0.589	-5.9	24.5	14.9
Hungary ('91/'12)	0.148	0.175	18.2	0.491	0.569	15.9	14.1	16.7
Ireland ('94/'10)	0.254	0.169	-33.5	0.508	0.531	4.5	10.1	10.0
Italy ('89/'10)	0.166	0.202	21.7	0.622	0.554	-10.9	26.0	19.3
Luxembourg ('91/'13)	0.106	0.153	44.3	0.397	0.597	50.4	18.6	18.4
Netherlands ('83/'13)	0.113	0.132	16.8	0.477	0.380	-20.3	34.9	5.3
Norway ('86/'13)	0.084	0.130	54.8	0.420	0.378	-10.0	9.5	6.0
Poland ('86/'13)	0.118	0.234	98.3	0.585	0.553	-5.5	36.5	21.0
Slovakia ('92/'10)	0.074	0.134	81.1	0.542	0.472	-12.9	10.8	23.1
Slovenia ('97/'12)	0.097	0.163	68.0	0.512	0.450	-12.1	11.9	8.4
Spain ('90/'13)	0.187	0.222	18.7	0.551	0.441	-20.0	21.4	6.7
Sweden ('92/'05)	0.083	0.117	41.0	0.382	0.381	-0.3	7.4	6.0
UK ('99/'13)	0.270	0.228	-15.6	0.513	0.464	-9.6	11.8	7.2

Tau-b expresses association between partners' educational levels. 'OR college' expresses the Odds Ratio of college educated men to be partnered with a college educated woman instead of a non-college educated woman (reference category non-college educated men)

But, its association with income inequality increased on average

Figure 1. Changing contribution of homogamy across time (actual - counterfactual inequality if homogamy were minimal)

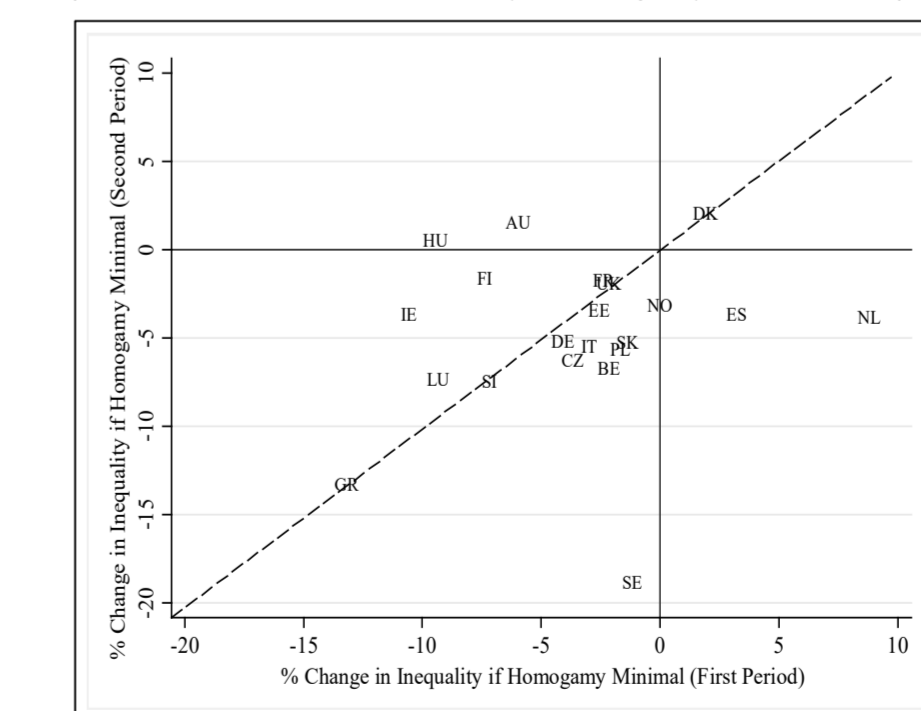
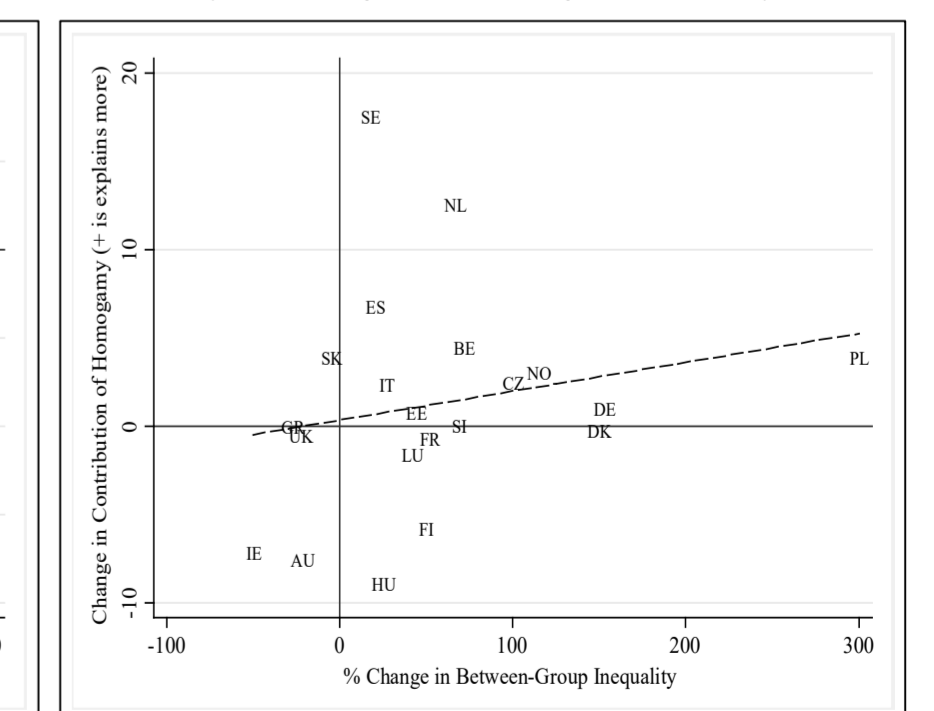


Figure 2. Change in contribution of homogamy to overall inequality and change in between-group inequality



Contribution increased in countries below 45° line

Changing levels of homogamy relatively unimportant, but its consequences play a (modest) role (i.e. increased returns from household levels of education)