Social background, inequality of educational opportunities and occupational attainments

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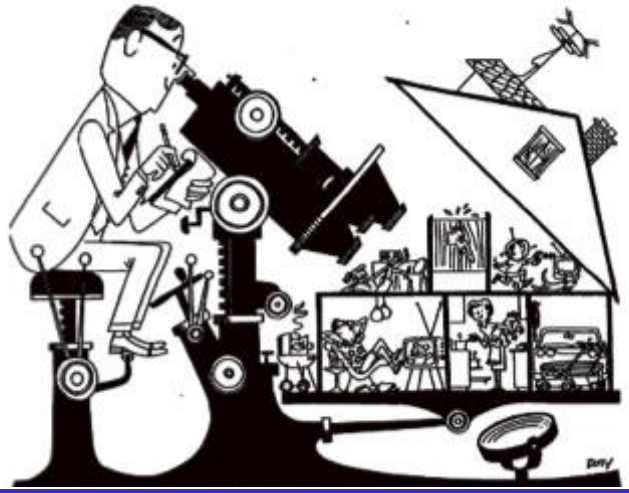
Premise

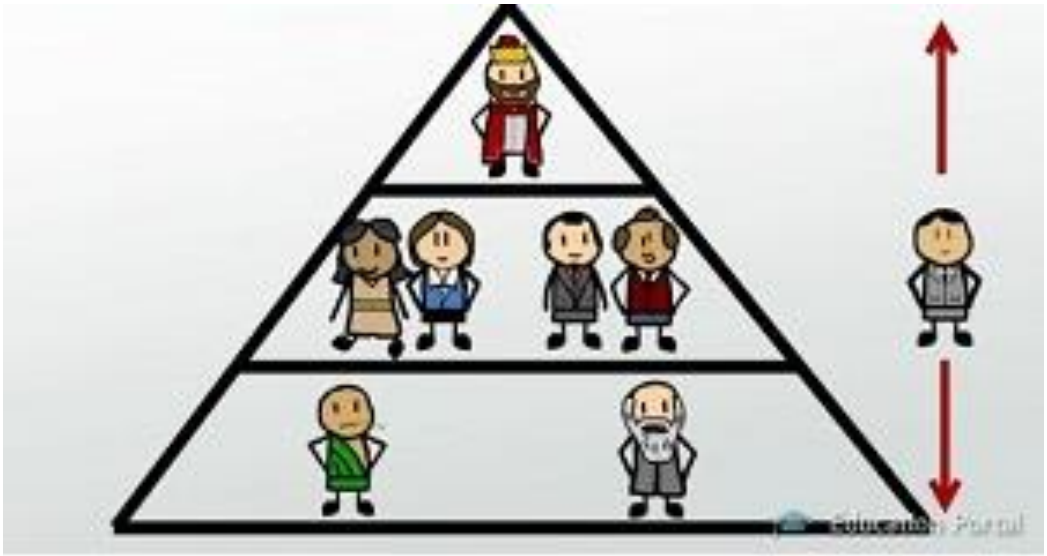
- Sociological view on the topics of social mobility and educational inequalities
- Why could it be interesting for you?
  - Be aware of what has been done in other fields
  - Compare with approach and findings from economics
  - Reflect on advantages and disadvantages of your own approach



Outline

- Definitions
- Analytical strategy: measurements and models
- The OED triangle
- Main empirical findings on:
  - Social mobility
  - Educational inequalities
  - Direct effect of social origin

The study of social mobility



Definition of social mobility

- **Social mobility**: the process through which individuals move between positions in the social structure
  - **Inter-generational mobility**: The relationship between the individual's social position and the one of his/her parents
  - Intra-generational mobility: The relationship between the individual's social position in different points of his/her life

Social mobility and inequality

- The movement between the social position of origin to the 'social destination' is regulated by a series of *processes that are expression and produce* ***social inequalities***

The phenomenon according to which different positions in the social structure provide individuals a different set of resources which are linked to different life chances

Reproduction of inequality

- Social positions provide individuals with a set of **economic, social and cultural resources** that provide various degrees of advantage
- Thus, analysing social mobility process means to focus on whether, to what extent and in which way *inequalities in one generation (parents) are* ***reproduced*** *in the following generation* (sons and daughters)
- The higher is the association between social origin and the social position attained the lower is the **'fluidity' of society** (less open society)

Key aspects to study social mobility

- Definition of
  - social positions
  - movements between social positions
  - measures of social mobility
  - ‘mechanisms’ explaining social mobility

Occupation-centred approach

- A large part of inequalities in the distribution of resources derive from the **social division of labour**
- Different occupations are characterized by different set of monetary and symbolic resources
- **Occupation** is the main characteristic that places an individual into the social structure → social class is derived from indicators of individuals' occupation and their employment relations
  (Erikson & Goldthorpe 1992; Breen 2004; Grusky et al 2012)

Intergenerational mobility studies

Economics

- Main outcome: **income** or earnings
- Measure: **elasticity**
- Origin: **father's income** measured in long-term panel data or with survey data ad-hoc strategies (e.g. two-sample two stage least squares estimation)

Sociology

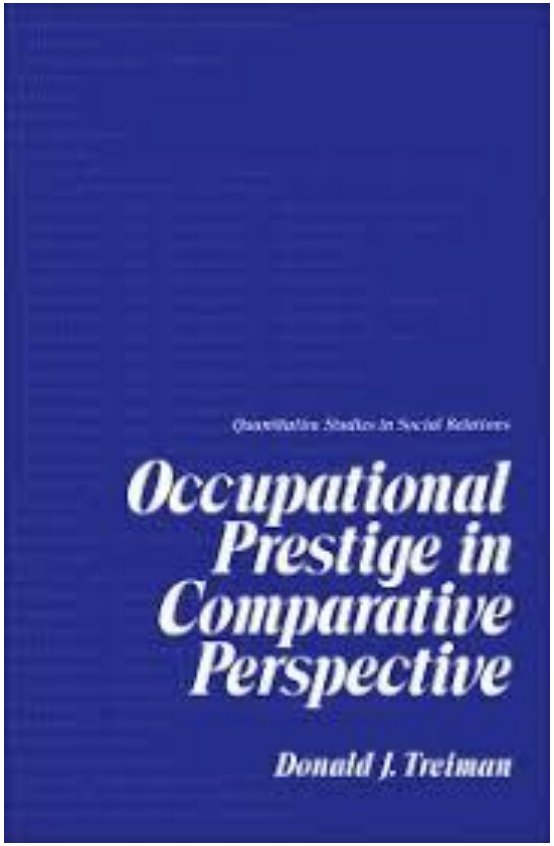
- Main outcome: **occupation-based measures** (social class, occupational status or prestige)
- **Odds-ratios** and related indices
- Origin: **father's or parents' occupation when child was 14** (collected retrospectively on respondents) in cross-sectional or longitudinal survey

Occupational mobility: *gradational approach*

- Simple unidimensional form in which families are arrayed on a scale defined either by a single variable (e.g., prestige) or a combination of variables (e.g., socioeconomic status)
- **Occupational prestige**: e.g. *SIOPS (Standard International Occupational Prestige Scale)* (Treiman 1977)
  - popular evaluation of occupational standing
- **Occupational status**: *ISEI (International Socio-Economic Index)* (Ganzeboom, de Graaf, Treiman 1992)
  - an optimal scaling procedure, assigning scores to each of 271 distinct occupation categories in such a way as to maximize the role of occupation as an intervening variable between education and income

The ‘Treiman constant’ (1975; 1978)

- Analyses of 85 prestige studies from 60 countries (13 of them involving replications over time) indicate that *prestige hierarchies were basically invariant through space and time*



The correlation between the scores obtained in each study with the standard scale constructed from them was on average .91 (range:.68 -.97)

Occupational mobility: class approach

- Conceive the social space as characterized by **qualitatively distinct social classes**
- Individuals are classified on the on the basis their labour market situation and work situation

Source of income, economic security and prospect of economic advancement (career)

Location in systems of authority and control at work

- Therefore, social classes can be ranked only to some extent (e.g. service vs working class), but it is not always possible (e.g. white collars vs petty bourgeoisie)

EGP scheme (Erikson & Goldthorpe 1992)

I	Higher-grade professionals, administrators, and officials; managers in large industrial establishments; large proprietors
II	Lower-grade professionals, administrators, and officials, higher-grade technicians; managers in small industrial establishments; supervisors of non-manual employees
IIIa	Routine non-manual employees, higher grade (administration and commerce)
IIIb	Routine non-manual employees, lower grade (sales and services)
IVa	Small proprietors, artisans, etc., with employees
IVb	Small proprietors, artisans, etc., without employees
IVc	Farmers and smallholders; other self-employed workers in primary production
V	Lower-grade technicians; supervisors of manual workers
VI	Skilled manual workers
VIIa	Semi-skilled and unskilled manual workers (not in agriculture, etc.)
VIIb	Agricultural and other workers in primary production

In Stata, -iskoegp-, 3 information needed:

1) ISCO-88 code
2) If respondent is self-employed
3) number of employees the respondent supervises

Table 1: The European Socio-economic Classification

	ESeC Class	Common Term	Employment regulation
1	Large employers, higher grade professional, administrative and managerial occupations	Higher salariat	Service Relationship
2	Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations	Lower salariat	Service Relationship (modified)
3	Intermediate occupations	Higher grade white collar workers	Mixed
4	Small employer and self employed occupations (exc agriculture etc)	Petit bourgeoisie or independents	-
5	Self employed occupations (agriculture etc)	Petit bourgeoisie or independents	-
6	Lower supervisory and lower technician occupations	Higher grade blue collar workers	Mixed
7	Lower services, sales and clerical occupations	Lower grade white collar workers	Labour Contract (modified)
8	Lower technical occupations[1]	Skilled workers	Labour Contract (modified)
9	Routine occupations[1]	Semi- and non-skilled workers	Labour Contract
10	Never worked and long-term unemployed	Unemployed	-

The
information required to create ESeC is:

- occupation coded to the minor groups (i.e. 3-digit groups) of ISCO-88
- details of employment status, i.e. whether an employer, self-employed or employee;
- number of employees at the workplace
- whether a worker is a supervisor.

Pros and cons of using occupations

- Advantages over using occupation over income:
  - less volatile
  - strongly associated with key indicators of socioeconomic advantage and income prospects
  - Easier to measure also with retrospective questions
- Disadvantages:
  - less variation in the outcome
  - miss intra-occupational inequality
  - difficult to apply to developing countries

Example of a mobility table (U.S.)

Table 1. Intergenerational Occupational Mobility of Men Born between 1950 and 1979

Percent

Origin: father's occupation	Destination: son's occupation						
	Upper professional	Lower professional and clerical	Self-employed	Technical and skilled	Farm sector	Unskilled and service	Total
Upper professional	**42**	24	7	12	0	15	100
Lower professional and clerical	29	**27**	7	17	0	20	100
Self-employed	29	18	**16**	19	0	18	100
Technical and skilled	17	19	6	**30**	1	26	100
Farm sector	14	11	8	17	**13**	37	100
Unskilled and service	16	17	6	22	1	**38**	100

Source: General Social Surveys, 1988–2004.

Source: Beller & Hout (2006)

Absolute vs relative mobility

- One crucial issue in mobility research is the need to separate:
  - structural effects on mobility, which are forced by changes in the social structure (as when a rapid decline of farmers leads to increased mobility out of that class)
  - "pure" form of mobility (competitive advantages)
- Absolute mobility: overall amount of changes between origins-destinations
- Relative mobility: net degree of changes between origins-destinations that are not due to modifications in the social structure

A (partial) measure of relative mobility

- **Odds ratio**: it is the ratio between two odds

[y=upper professional] [y=unskilled]

Odds 1 (ω_1) : (P(Y=1)|X=1) / (P(Y=2)|X=1) [x=upper prof.]

Odds 2 (ω_2) : (P(Y=1)|X=2) / (P(Y=2)|X=2) [x=unskilled]

$$OR = \Omega_{1,2}^{1:2} = \frac{\omega_1}{\omega_2}$$

0 (min), +∞ (max), critical value=1

0<OR<1: group X=1 has a lower propensity/risk than group X=2

OR=1: group X=1 has the same propensity/risk than group X=2

OR>1: group X=1 has a higher propensity/risk than group X=2

- How many OR can you compute on a given table? (R*(R-1)/2)*(K*(K-1)/2) where R is the number of categories of X and K of Y

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Source: General Social Surveys, 1988–2004.

$$OR^{1:6} = \frac{(42/15)}{(16/38)} = 6.7$$

Source: Beller & Hout (2006)

Log-linear analysis (LLA)

- Log-linear analysis is a technique used to examine the relationship between more than two categorical variables
- Used for both **hypothesis testing and model building**
- Models are tested to **find the most parsimonious** (i.e., least complex) model **that best accounts for the variance in the observed frequencies**
- LLA of class mobility provides a very flexible tool to **capture the intergenerational *association***, not constrained by linearity or even ordinality assumptions; although these possibilities can be empirically tested by means of goodness of fit statistic comparisons (Torche 2013)

LLA foundations

- The logarithm of the expected value of the response variable is modelled as a linear combination of the explanatory variables
- The goal of log-linear analysis is to determine which **model components** are necessary to retain in order to best account for the data.
- Model components are the number of **main effects** and **interactions** in the model.

Each log-linear model can be represented as a log-linear equation. For example, with the three variables (A, B, C) the saturated model has the following log-linear equation:[1]

$$\ln(F_{ijk}) = \lambda + \lambda^{A} + \lambda^{B} + \lambda^{C} + \lambda^{AB} + \lambda^{AC} + \lambda^{BC} + \lambda^{ABC},$$

where

F_{ijk} = expected frequency in cell$_{ijk}$;

λ = the relative weight of each variable.

Log-linear analysis – topological models

Topological models use a single matrix to model different levels of association without assuming a rank-order for social classes. For example,

- the quasi-independence model (assuming a higher probability of remaining in the class of origin),
- the quasi-symmetry model (assuming that flows are symmetrical around the main diagonal),
- the "levels" model (postulating zones of the table with different levels of association).
- The "crossing" model (multiple matrices to capture the varying difficulty of crossing barriers between classes)

Main findings from occupational mobility studies

Milestone contributions

- Lipset and Zetterberg (1956) reported that the **rate of mobility** (between white collar and blue collar occupations) in 12 national studies (nine nations) that they were able to assemble **varied little**

- Erikson & Goldthorpe (1992) found that countries **differed in the strength of association** (or, inversely, openness) but that they exhibited a strong **similarity in the pattern of association and overall stability over time**

Intergenerational persistence in Erikson & Goldthorpe (1992)

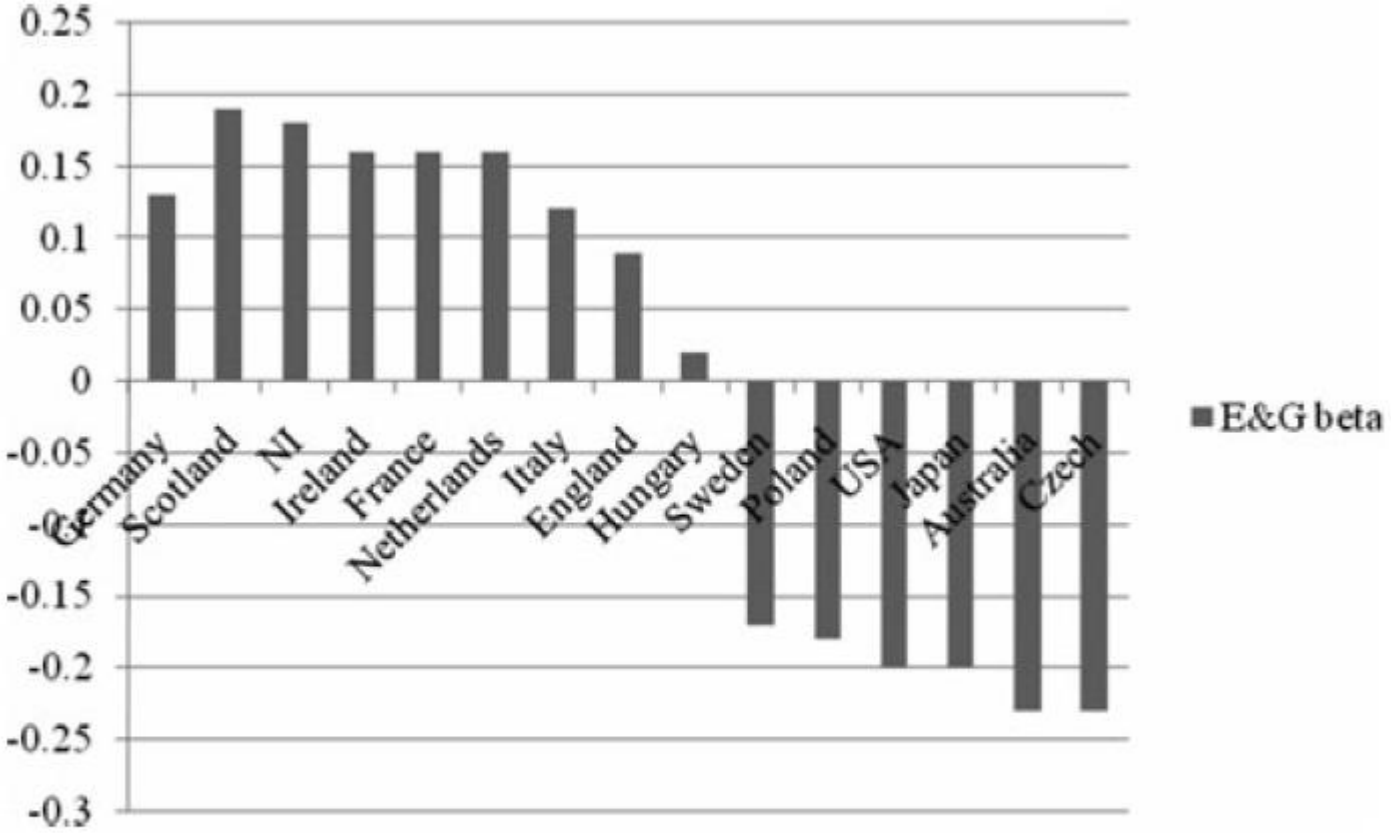


Figure 2. Parameters from Erikson and Goldthorpe Social Class Fluidity Model.

Source: Erikson and Goldthorpe (1992; Table 11.1).

Intergenerational persistence in Breen (2004)

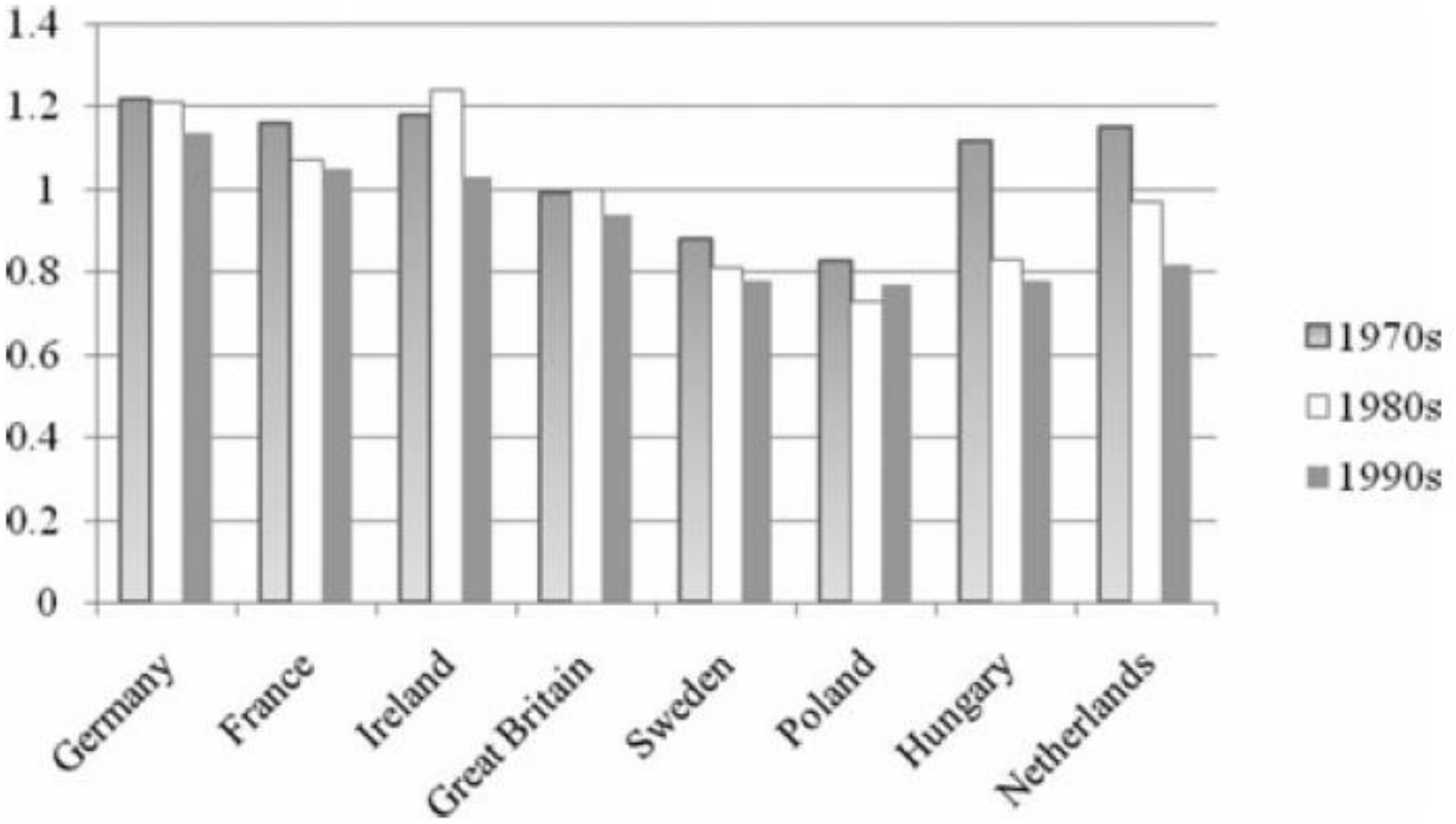
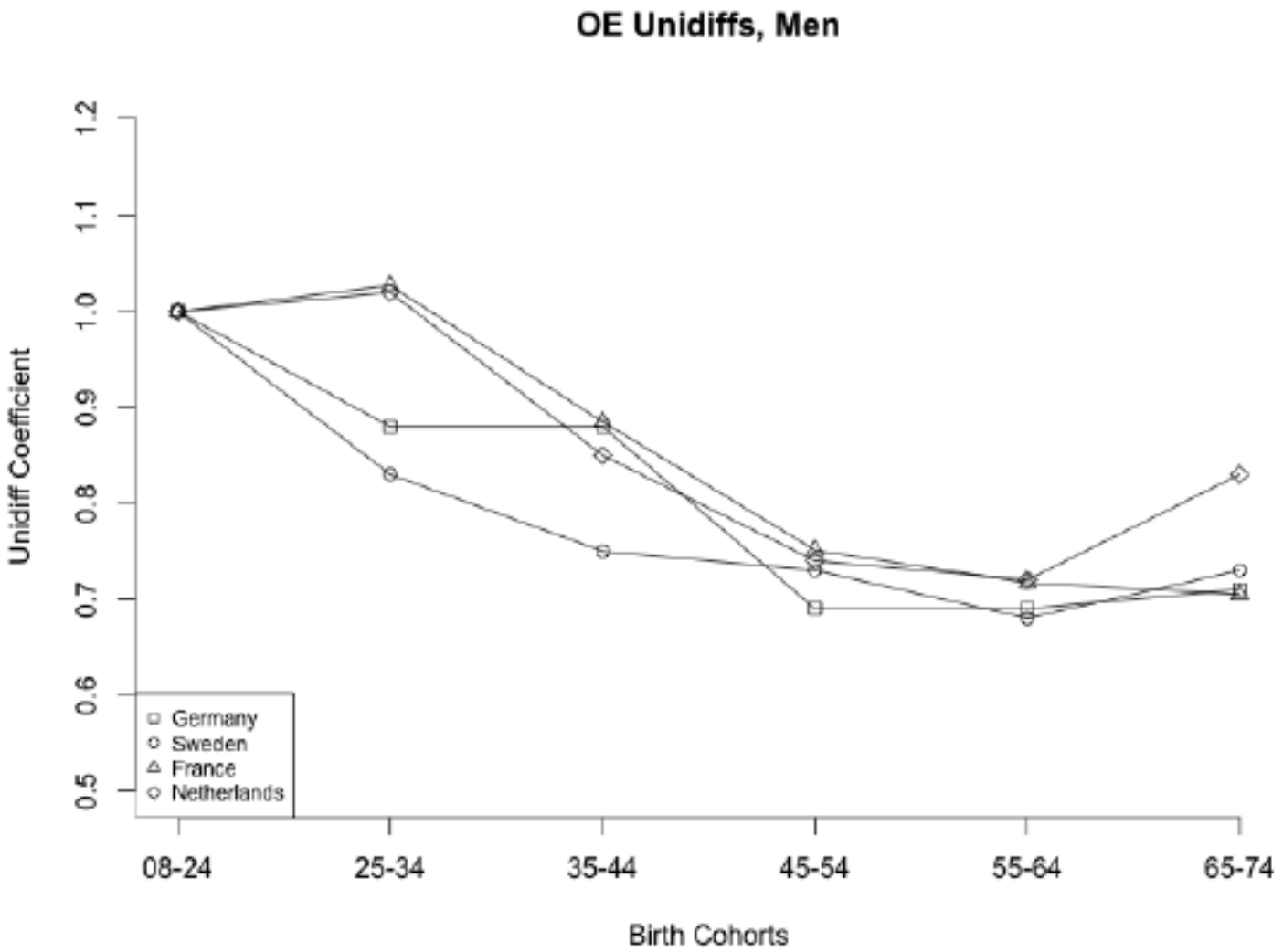


Figure 3. Parameters from Social Class Fluidity Models from Breen (2004).

Source: Breen (2004) Figure 3.3. With thanks to Richard Breen for providing these figures.

Updated evidence from Breen (2018, forth.)



Overview of main findings

Trends over time

- A **convergent** trend among countries in their **absolute mobility rates** and in their class structures
- Relative mobility: A widespread tendency towards **greater fluidity** for both men and women (exceptions: UK, partly Germany)

Cross-national findings

- **Countries differ** in their **level of social fluidity** and they do so in much the same way for both sexes
- Germany, France, Italy, and Ireland seem to be the least fluid countries; Israel, Sweden, Norway, Hungary, Poland, and, by the 1990s, the Netherlands, the most fluid

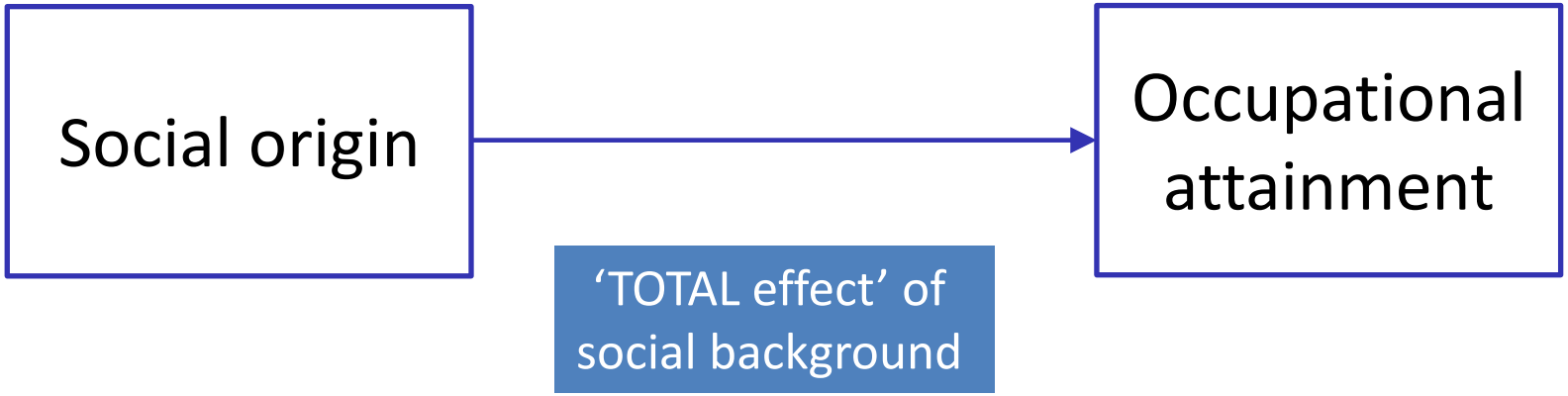
Any systematic difference across countries?

- For some authors, a common pattern across countries with idiosyncratic variations (Erikson & Goldthorpe 1992)
- For others, there are some systematic variations that can be traced back to the educational system and welfare state (Breen 2004; Beller & Hout 2006; Esping-Andersen & Wagner 2012)

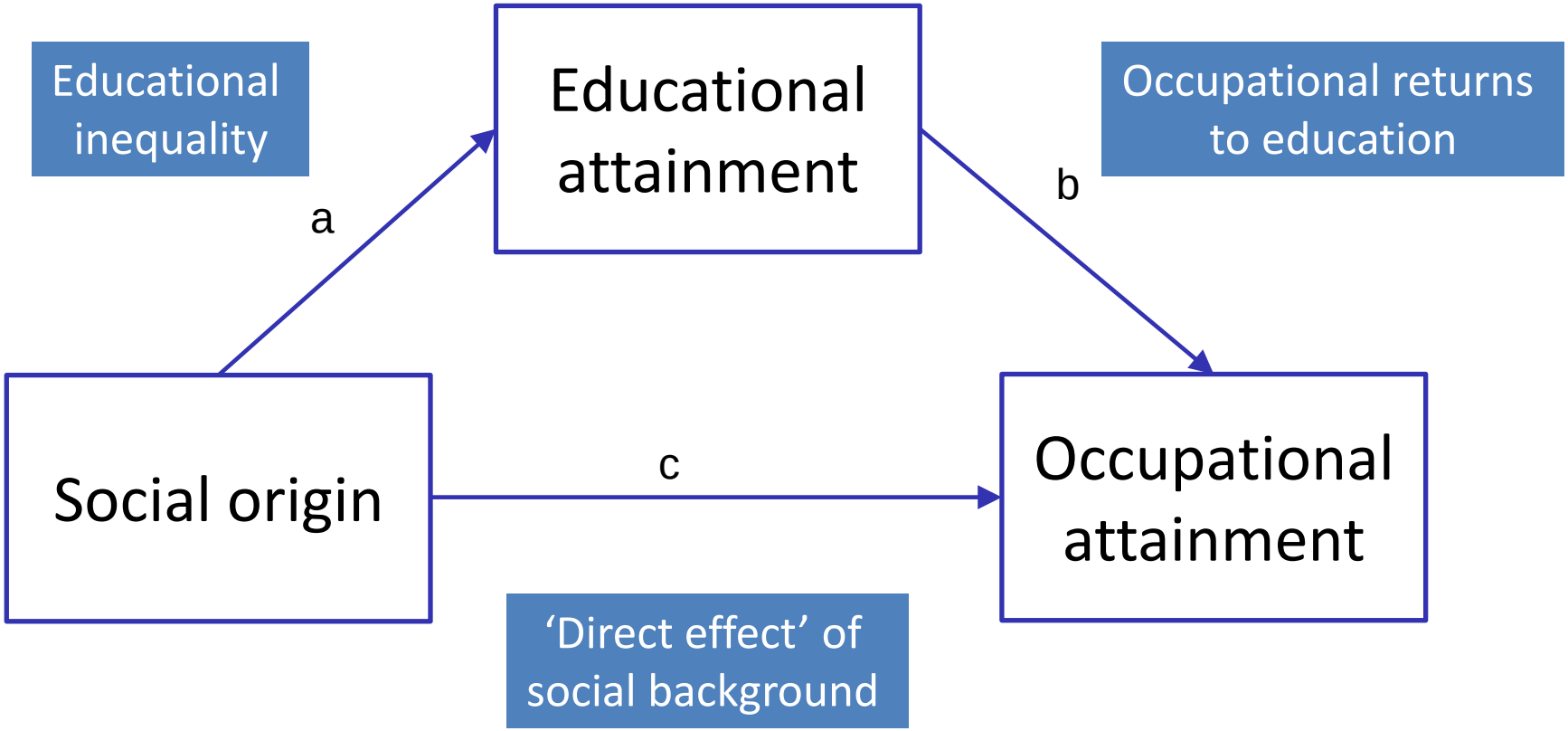
The role of education in social mobility process

The OED triangle scheme

Social mobility: the OED triangle



Social mobility: the OED triangle



a×b = the mediating role of education in intergenerational reproduction of inequalities

The role of education in mobility

- Education is the **main factor** in both upward mobility and the reproduction of status from generation to generation
- Education mainly **mediates the hierarchical component of mobility** and has little or no effect on other elements, particularly the tendency for self-recruitment among farmers and the petty bourgeoisie
- The overall extent to which education mediates the association between origins and destinations **increased over the last decades of the 20th century**
- but continues to **vary considerably between countries**. Its role is greatest in Sweden (which might therefore be described as the most meritocratic of our countries) and weakest in Britain

Social inequalities in educational attainment (a)

Context: educational expansion

- An impressive **growth of participation** in education has occurred over the twentieth century in all industrialized societies
- Increase in the average years of schooling and to an **upward shift** in the distribution of educational degrees in the population
- Nowadays **primary and lower secondary** education have become virtually **universal** in most of industrialised countries

Equality of opportunity principle

- The idea of **meritocracy** and **equality of education opportunity** as regulative principles for the allocation of individuals in the social structure has gained consensus (Young, 1961; Roemer, 1998)
  - Socioeconomic rewards should be allocated on the basis of **individuals' competencies and skills**, which must be achieved on the basis of talent, aspirations, and effort
  - The possibility to acquire a given level of education should not depend on **ascriptive characteristics** like gender, race and social background

Key questions

- Has socio-economic background become less important in affecting educational destinies across cohorts?
- To what extent inequalities in educational attainment on the basis of social origin diminished?

If so,

- Are the trends similar across countries?
- In which periods did this happen?

Key questions

- Has socio-economic background become less important in affecting educational destinies across cohorts? [YES/NO]
- To what extent inequalities in educational attainment on the basis of social origin diminished? [STRENGHT of IEOut]

If so,

- Are the trends similar across countries?
- In which periods did this happen?

Measuring and modelling educational attainment

- Traditional approaches (***education in absolute terms***):
  - Years of education
  - Highest educational *degree or level* attained
  - Educational transitions: passing through subsequent school transition points
- Statistical models:
  - OLS regression
  - Ordinal or multinomial logistic regression
  - More sophisticated ordinal models (stereotype reg., generalized ordinal regression)
  - Sequential logit model

Empirical evidence I

- For long time the main empirical evidence on this issue came from **Blossfeld and Shavit (1993)**
- Collaborative cross-national study to examine changes of IEOut in 13 industrialized nations using nation-specific datasets
- They use regression models to analyse the effect of father's education and class on educational transitions and years of education
- In general, the main pattern found was of **'persistent inequality'** in 11 out of 13 countries, where Sweden and, partially, the Netherlands are the exceptions

Empirical evidence II

- More recently, Breen and colleagues (2009) analysed larger datasets from 8 European countries covering cohorts of people born in the first two-thirds of the 20th century
- They found a **widespread decline** in the association between social class of origin and educational outcomes.
- Apart of the specific statistical technique employed , the **larger sample sizes** for each country could be a crucial factor in explaining the difference with Blossfeld and Shavit's findings

More recent evidence I

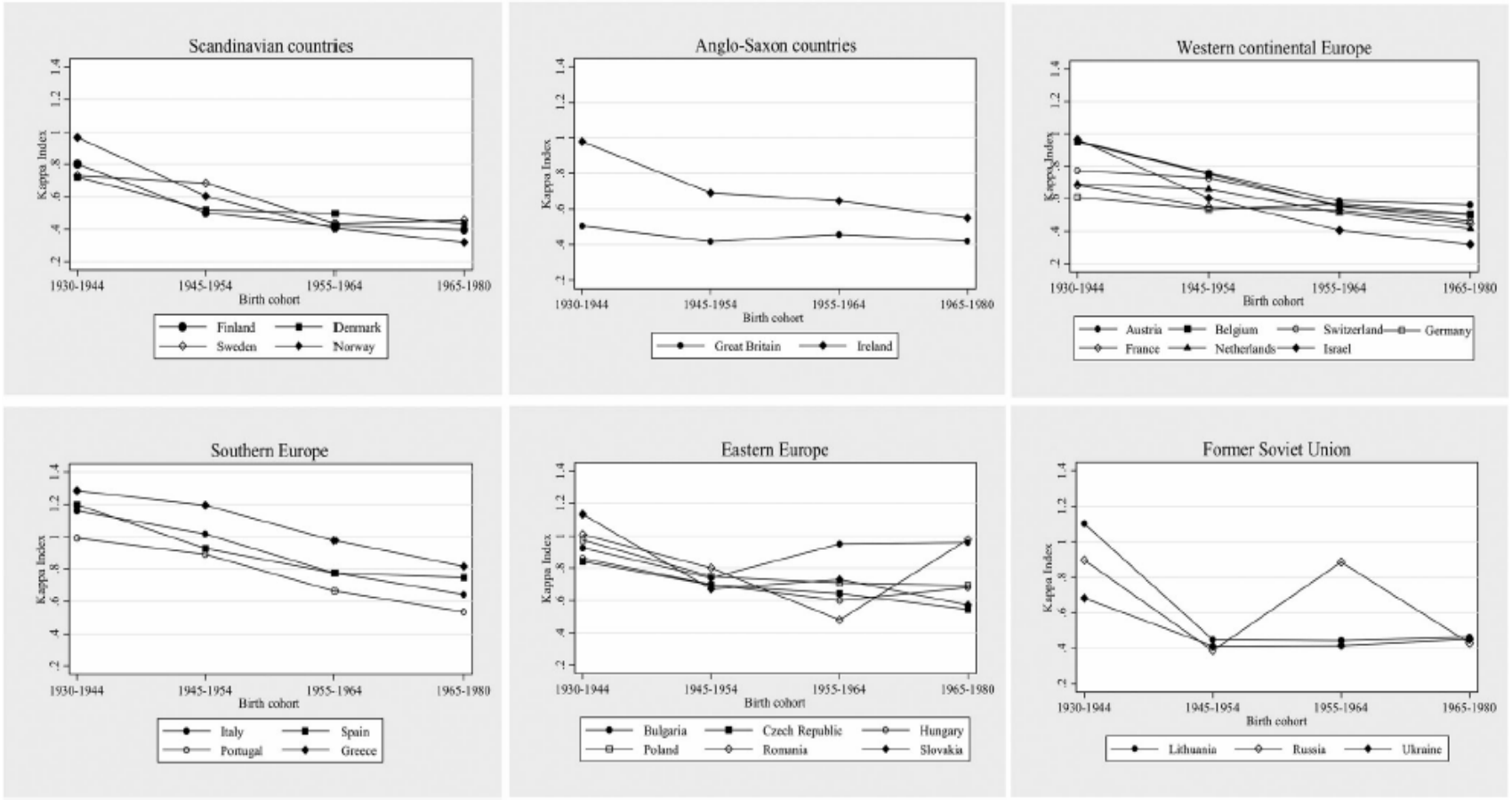


Figure 1. Cohort trends in inequality of educational opportunity by father's social class across 26 European countries for individuals born between 1930 and 1980 (kappa indices extrapolated from ordered logit models).

Source: Barone & Ruggiera (2017)

More recent evidence II

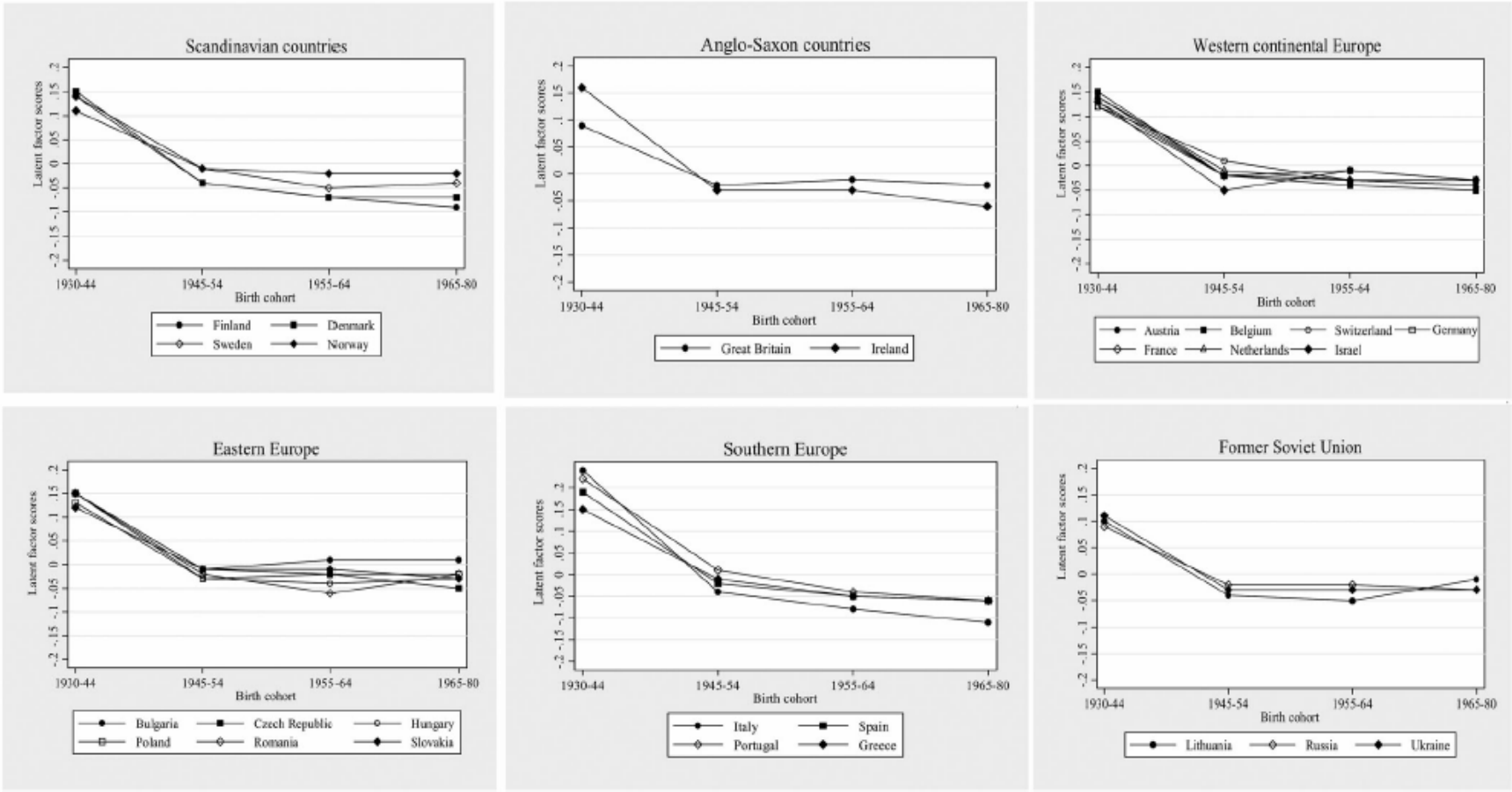


Figure 2. Cohort trends in inequality of educational opportunity by family background across 26 European countries for individuals born between 1930 and 1980: changes in latent factor scores extrapolated from father's social class, education and social status (ordered logit parameters).

Explanations I: achievement

- Specific factors that could have weaken the relationship between social origin and pupils' achievement in school:
  - improvement in living conditions
  - public welfare allowances
  - reduction of the social class gap in health and nutrition
  - public provision of pre-school education
  - increase in the number of hours pupils spend in schools
  - school support programs to reduce achievement gaps

Explanation II: school-related decisions

- Decline of the **direct costs** of education:
  - school fees have been abolished in many countries
  - the number of school has increased and their geographical distribution has become less uneven
  - improvements in travelling conditions and public transports
- **Indirect costs** became less relevant, despite being still important
  - the average family size has declined
  - the average family income has increased

Explanation III: institutional factors

- The length of **compulsory schooling** has expanded → forced working class children to attend school for longer periods than in the past
- In some countries **tracking** has been **postponed** (e.g. Italy in the 1960s) → more time for lower class pupils to show their academic potential

Conclusions I

- Currently IEOut is substantially lower than it was 50 years ago in Europe
  - This conclusion applies to both men and women
  - It is robust to different measurement strategies for social origins and education
- The decline was similar looking at social class, social status and parental education

Conclusions II

- The decline was more pronounced in the cohorts born in the periods 1930–1944 and 1945–1954
- This was a period of unprecedented economic growth, increasing affluence and significant improvement of the living conditions of the lower classes across Europe
- relevance of structural changes, possibly operating through a cost-equalizing mechanism

Conclusions III

- The equalizing trend weakened considerably, or even flattened out, for most European countries in the cohort born in 1955–1964, which experienced the key educational transitions mostly in the 1970s
- Stagnation continued in the more recent cohorts, born between 1965 and 1980
- The ‘golden age’ of educational equalization seems to be already behind us

Direct effect of social background on occupational attainment (b)

Logic behind these studies

- Education is the **great equalizer** if there is no direct effect of social origins (DESO) on labour market achievement, over and above the effect of own education.
- If among individuals with the same level of schooling those from better-off families still on average achieve better jobs, education is not the great equalizer.

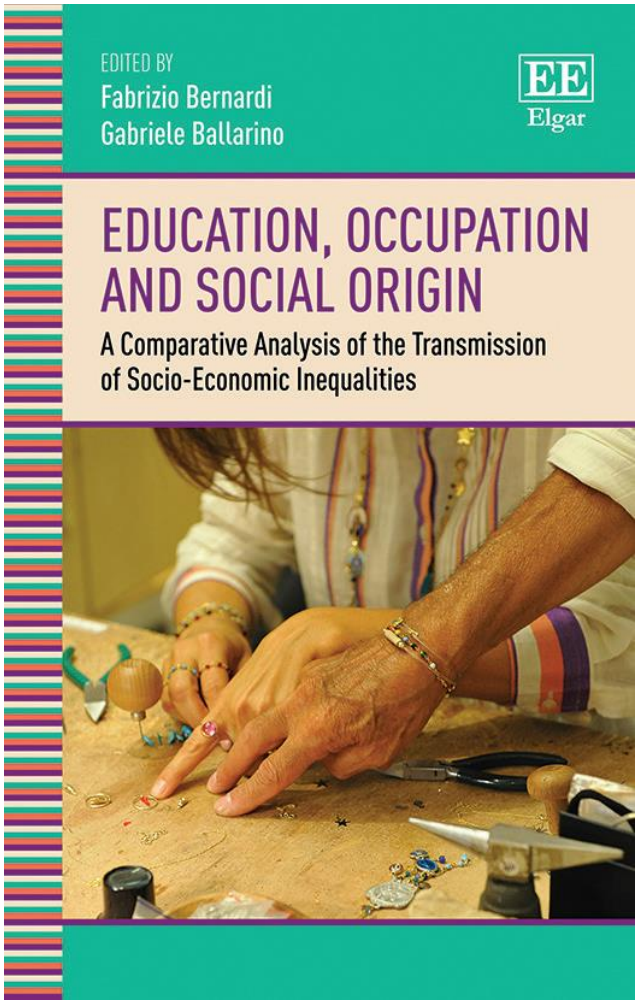
Main research questions

1. Is there a direct effect of social origins (DESO) on labour market achievement, over and above the effect of own education?

$$Y = a + \mathbf{b_1}SB + b_2EDU + b_3COHORT + b_4Z + e$$

1. Has DESO changed (declined) over time?

$$Y = a + b_1SB + b_2EDU + b_3COHORT + b_4Z + \mathbf{b_5}(SB \times COHORT) + e$$



Mechanisms underlying the DESO

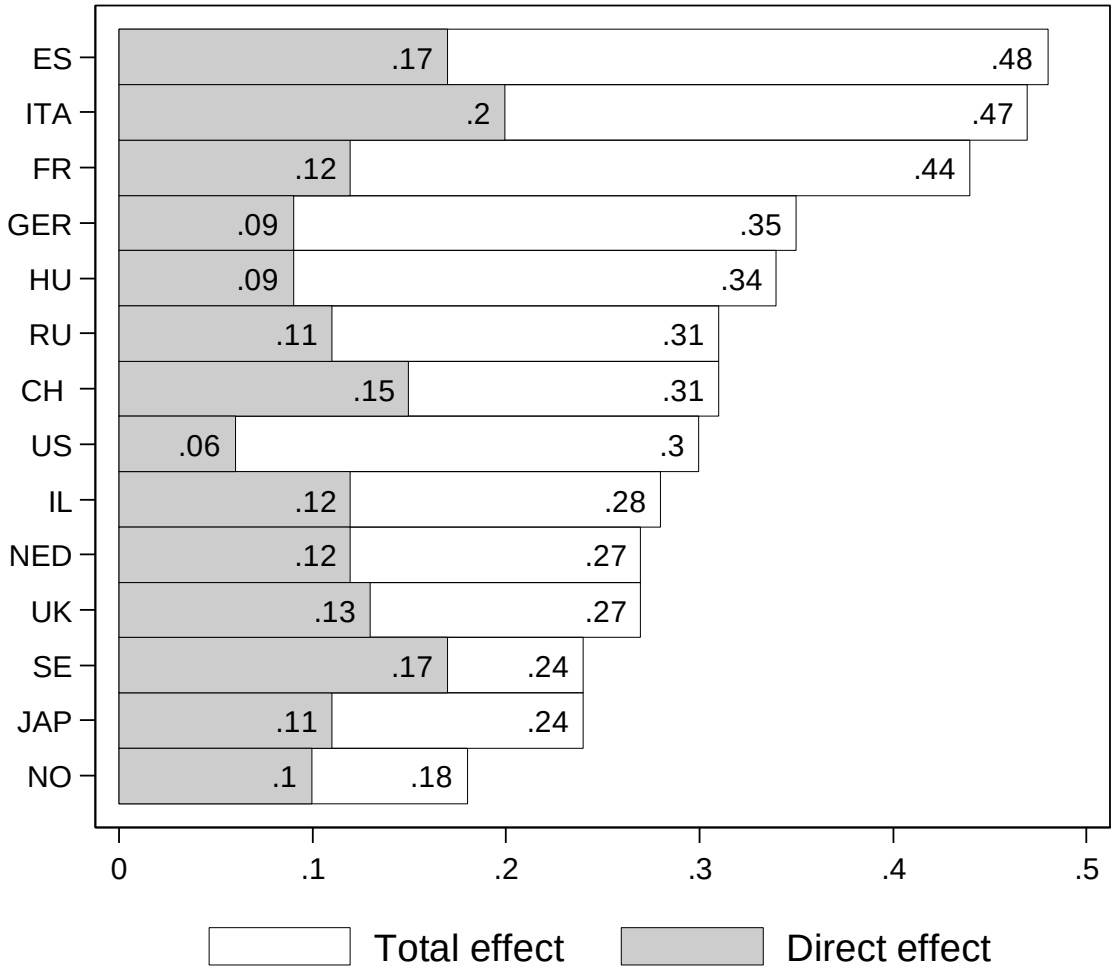
5 possible mechanisms underlying the DESO (Erikson & Jonsson 1998)

- Direct inheritance of family business
- Differences in productivity: non-cognitive skills (eg., communication skills) or personality characteristics (eg. assertiveness) not adequately measured by education
- Social networks
- Aspirations: those from higher social standing are more career-oriented and more willing and able to take risky choice that, later on, pay off in terms of higher earnings (as in Breen-Goldthorpe 1997).
- Favouritism: employers' preferences to hire for better jobs those who come from high SES families, all other conditions being equal.

DESO on ISEI: main findings

- **Father-son gross correlation** for occupational status (TESO) is in the the order btw .2 and .4 in all countries. This is the magnitude found (for the US) by Blau & Duncan (1967). A constant over time?
- When education is controlled for (grey bars), the **association decreases by 1/2 to 3/4**. So the main impact of family background goes through education, as expected.
- However, **the remaining direct effect is not trivial**. In most countries DESO lies between **.**10 and .15.

Cross-national variation in DESO on ISEI



whole bar: gross origin effect; grey bar: direct origin effect

Example

vs

6-10 points higher ISEI, net of education

A 65 points variation in parental ISEI (i.e. having a parent who is a medical doctor instead of an unskilled worker) is associated on average with an increase of **6-10** points in own ISEI, net of achieved education

Is it relevant?

Such a difference is the one separating, for instance, a university professor from a high school teacher, or a taxi driver from a windows cleaner

Some comparisons (from the country chapters):

In US, net of education being black is associated on average to **4** ISEI points penalty.

In Norway, Spain, the UK, net of education the gender penalty is **2** ISEI point

Results for income

- Results concerning earnings are less clear, because of measurement problems: family income (US)/individual income; annual (France)/monthly (UK); gross (NO)/net (UK) etc.
- However, a DESO on (log)earnings is everywhere to be found
- In this case, a difference in parental ISEI of 65 points (medical doctor versus unskilled labourer), is associated to an increase in monthly earnings of about 20%(65*.003). For instance: 1.500€ + 300€ monthly premium (€3600 more per year)

Does DESO change over time?

no change/no trend	decline or U-shaped	increase
	ISEI	
Germany	Netherlands	France
Hungary	Sweden	Israel
Italy		
Japan		
Russia		
Spain		
Switzerland		
UK		
USA		
	Income	
Netherlands	France	Hungary
Norway*	Israel	Norway*
Japan (F)	Japan (M)	Russia
UK	Sweden	

Conclusions on DESO

- A statistically significant and substantially relevant DESO was found in all countries, larger in Southern EU

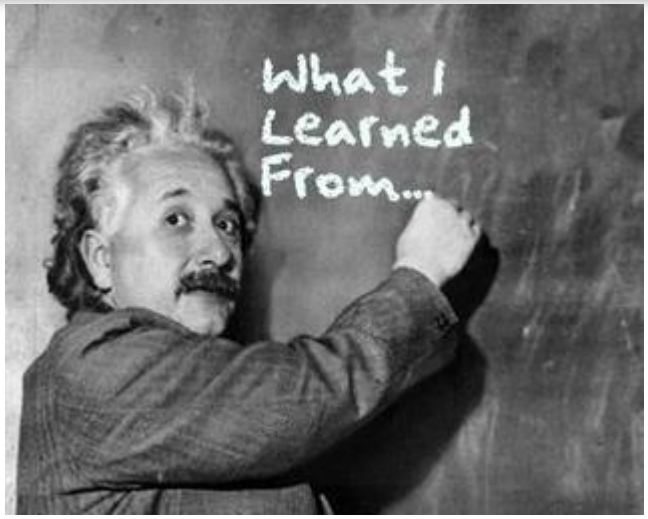
- No major signs of change over time in most countries

Quick mention of recent advancements

Recent issues and developments

1. Measurement of origins and destinations: Micro-classes approach (Grusky, Jonsson et al. 2012)
2. Measurement of origins: what is the role of the mother? (Beller 2009, ASR)
3. Nominal vs positional value of educational credentials (Shavit & Park, RSSM special issue)
4. Retrospective approach vs prospective approach (Mare & Schwartz 2006; Breen & Lawrence 2016)

Take-home messages



Take-home messages

- Reduced association between origins and destination → Increased fluidity over time in many Western countries,
- Mainly due to declining inequalities in educational attainment
- However,
  - Still large educational inequalities in recent cohorts
  - Main improvements in the 60s, while stagnation from the 70s!
  - In most countries, social origin still affects occupational destination, for equally educated individuals

Thank you!

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