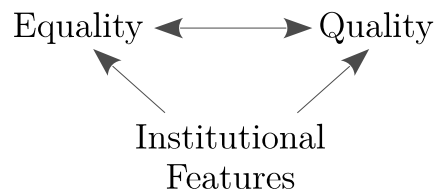


Equality and Quality in Education

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Performance dimensions of education systems



Performance dimensions of education systems

Quality Impart knowledge that allows individuals to take part in social, economic, and political life

Equality Provide access to valuable credentials independent of individuals' socio-economic background

Institutional stratification as core feature of educ. systems

"The structure of educational systems, especially those within industrial society, can be understood primarily in terms of the structure of their selection processes"
(Hopper 1968)

- ▶ Differentiation of educational opportunities between and within educational levels (Hopper 1968, Allmendinger 1989)
- ▶ Form of educational tracking or streaming, i.e. timing and rigidity of student selection mainly on the secondary level

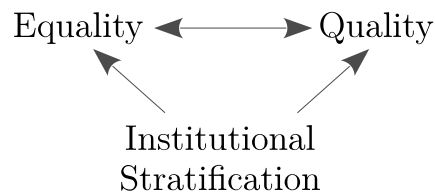
Institutional stratification and Equality

- ▶ Information requirements for successful educational careers
- ▶ Information resources of children from advantaged socio-economic backgrounds
 - ▶ “Strategic knowledge” of highly educated parents; parental guidance and management (Baker/Stevenson 1986, Lareau 1989, Useem 1992)
- ▶ Institutional stratification increases information requirements and advantage of higher status students
- ▶ Existing empirical research
 - ▶ Clear evidence for negative association (e.g., Ammermüller 2005, Marks 2005, 2006; Hanushek/Woessmann 2006; Pfeffer 2008; Horn 2009)

Institutional stratification and Quality

- ▶ Defense of institutional stratification
 - ▶ Sorting of students increases homogeneity of ability and learning potential
 - ▶ Classroom homogeneity allows better targeting of teaching to students' needs
 - ▶ Classroom heterogeneity, in turn, hurts learning progress of all (especially those at the top)
- ▶ Existing empirical evidence
 - ▶ Comparative research: Weak negative or no association? (Hanushek/Woessmann 2006; Horn 2009)
 - ▶ Tracking research: Higher average achievement in less stratified environments (Gamoran 1992, 1996)

Research Questions



International Adult Literacy Survey (IALS)

- ▶ Assessment of adult literacy levels in twenty OECD nations
- ▶ Common set of survey questions (administered 1994-1998)
 - ▶ Detailed literacy measures
 - ▶ Retrospective information on respondents' family background
- ▶ Countries included
 - ▶ Belgium, Canada, Chile, the Czech Republic, Denmark, Finland, Great Britain (England and Wales), Germany (West-German respondents), Hungary, Ireland, Italy, Northern Ireland, Norway, New Zealand, Poland, Slovenia, Sweden, Switzerland (German-speaking part), United States

Measure of Equality

- ▶ Association of parents' and their children's educational degree attained (ISCED-76)
- ▶ Cross-classification and log-linear modeling (see Pfeffer 2008)

Measure of Equality

- ▶ Association of parents' and their children's educational degree attained (ISCED 79)
- ▶ Cross-classification and log-linear modeling (see Pfeffer 2008)
- ▶ Here: UniDiff model (Erikson/Goldthorpe 1992; Xie 1992)
 - ▶ UniDiff parameter = degree of association / equality
- ▶ Advantages
 - ▶ Control for differences in distribution of educational degrees
 - ▶ Association across all educational levels
 - ▶ Parsimony

Measure of Equality

“Destination” (Child)

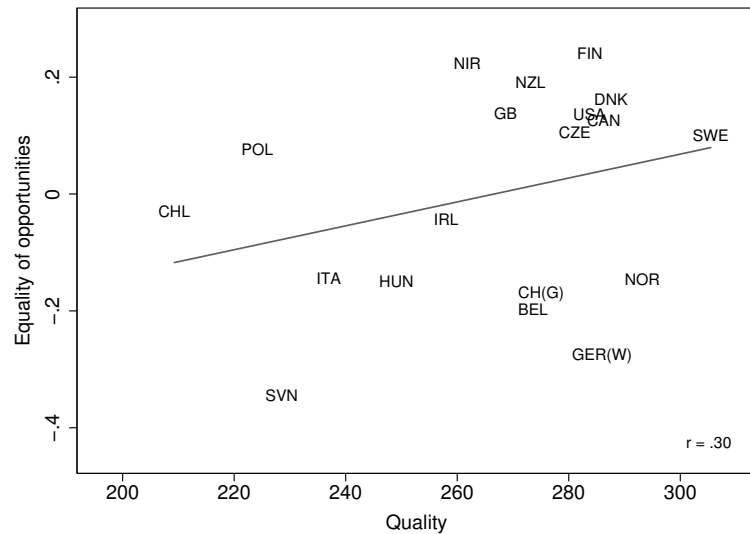
“Origin” (Parent)					

$$F_{ij} = \lambda \cdot \lambda_i^O \cdot \lambda_j^D \cdot \lambda_{ij}^{OD}$$

Measure of Quality

- ▶ Literacy as ability of adults to “*use printed and written material to function in society*”
 - ▶ Prose literacy
 - ▶ Document literacy
 - ▶ Quantitative literacy
- ▶ Overall quality measure
 - ▶ Literacy averaged across three dimensions ($r \geq .97$)
 - ▶ Weighted and averaged across five plausible values
 - ▶ Range: 0-500 points (IRT scaled); Standard deviation: 61
- ▶ Advantages
 - ▶ Valid measure of central output of education systems
 - ▶ Circumvents challenges involved in studying institutional effects based on *student* test scores

Positive correlation of Equality and Quality



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Institutional context

- ▶ Institutional stratification
 - ▶ *Low*: untracked or tracked comprehensive schools (N=9)
 - ▶ *High*: separate schools; restricted access to PSE (N=8)
 - ▶ *Very High*: + early selection; minimal mobility (N=2)
- ▶ Other institutional characteristics as “controls”
 - ▶ Standardization (dummy)
 - ▶ Privatization (dummy)
 - ▶ Relative size of post-secondary sector (%)

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Institutional context of Equality

	1	2	3	4
Highly stratified	-0.16*	-0.16+	-0.16*	-0.17+
	(0.05)	(0.06)	(0.04)	(0.06)
Very highly stratified	-0.32*	-0.33*	-0.30*	-0.33*
	(0.01)	(0.02)	(0.03)	(0.02)
Standardized		0.01		
		(0.88)		
Private sector			0.08	
			(0.32)	
Rel. size of PSE				-0.00
				(0.78)
N	19	19	19	19
R-squared	0.37	0.37	0.41	0.37

+ p<.10, * p<.05, ** p<.01, *** p<.001; standard errors in parantheses

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Institutional context of Quality

	1	2	3	4
Highly stratified	-36.64**	-36.85**	-36.66**	-27.86**
	(0.00)	(0.00)	(0.00)	(0.01)
Very highly stratified	-1.69	-0.04	-1.58	8.44
	(0.91)	(1.00)	(0.92)	(0.57)
Standardized		-4.98		
		(0.63)		
Private sector			0.34	
			(0.97)	
Rel. size of PSE				1.65*
				(0.05)
N	19	19	19	19
R-squared	0.50	0.51	0.50	0.62

+ p<.10, * p<.05, ** p<.01, *** p<.001; standard errors in parantheses

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Equality and Quality in Education

- ▶ Negative association between institutional stratification and Equality and Quality
- ▶ Institutional effects?
 - ▶ Other institutional characteristics as counfounders
 - ▶ Macroeconomic characteristics as confounders

Macroeconomic context

- ▶ Level of economic development
 - ▶ Equality: “Industrialism thesis” (Treiman 1970) largely rejected
 - ▶ Quality: Education as determinant of growth (Barro 1998); National wealth provides conditions conducive to skill growth
 - ▶ Measure: GDP per capita, industrialism index
- ▶ Level of economic inequality
 - ▶ Equality: Equality of conditions as necessary requirement of equality of educational opportunities (Jencks et al. 1972)
 - ▶ Quality: More unequal industrialized countries = larger low-skill sector = less growth or even destruction of literacy skills (Braverman 1974)
 - ▶ Measure: Gini index of disposable income

Macroeconomic context of Equality

	1	2	3	4
Highly stratified	-0.16*	-0.16	-0.12	-0.17+
	(0.05)	(0.13)	(0.17)	(0.05)
Very highly stratified	-0.32*	-0.32*	-0.32*	-0.32*
	(0.01)	(0.02)	(0.02)	(0.02)
GDP per capita		-0.00		
		(0.96)		
Industrialization			0.05	
			(0.29)	
Income Gini				0.00
				(0.70)
N	19	19	19	19
R-squared	0.37	0.37	0.42	0.38

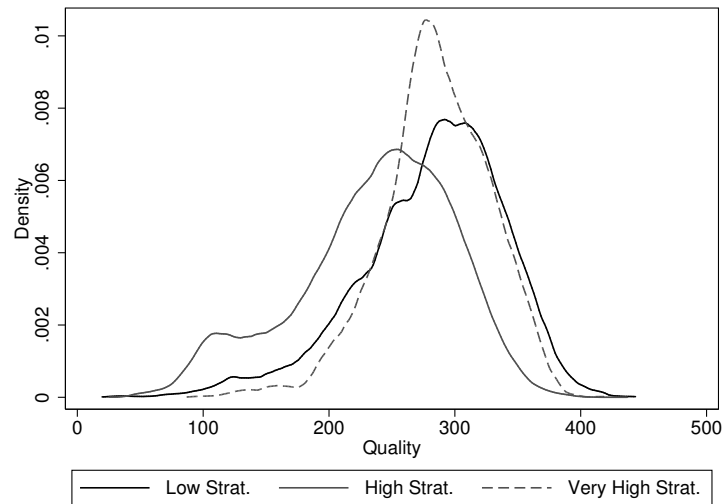
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Macroeconomic context of Quality

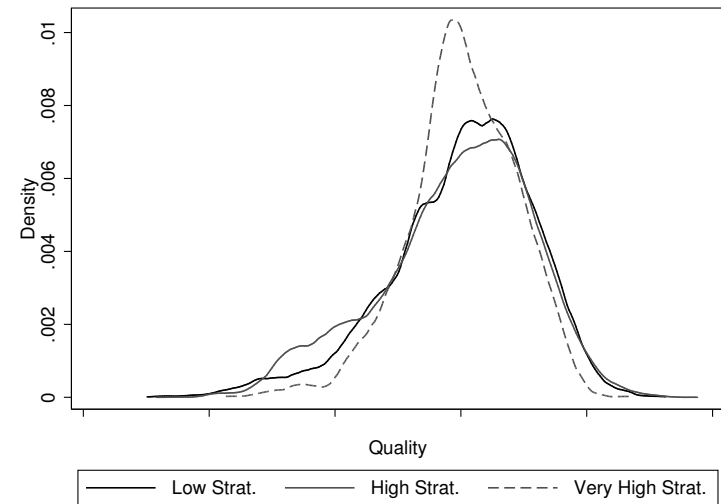
	1	2	3	4
Highly stratified	-36.64**	-22.22+	-22.83**	-25.84**
	(0.00)	(0.07)	(0.01)	(0.00)
Very highly stratified	-1.69	-8.84	0.37	-2.58
	(0.91)	(0.55)	(0.97)	(0.82)
GDP per capita		13.08+		
		(0.07)		
Industrialization			17.14**	
			(0.00)	
Income Gini				-1.85**
				(0.00)
N	19	19	19	19
R-squared	0.50	0.60	0.76	0.74

+ p<.10, * p<.05, ** p<.01, *** p<.001; standard errors in parantheses

Institutional structure and distribution of Quality



Institutional structure and distribution of Quality (adjusted)



Summary of findings

- ▶ Equality and Quality are positively related
- ▶ Institutional stratification and Equality
 - ▶ Clear negative association
 - ▶ Stable under control of other institutional and macroeconomic features
- ▶ Institutional stratification and Quality
 - ▶ Lower quality in highly stratified systems, but not very highly stratified systems
 - ▶ Similar distribution of quality controlling for other institutional and macroeconomic features
 - ▶ But remaining slight left skew in highly stratified systems

Policy implications

- ▶ No trade-off between Equality and Quality
- ▶ De-stratification of education systems may
 - ▶ ... increase Equality ...
 - ▶ ... at no cost in terms of Quality (and possibly some gains at the bottom in highly stratified systems)