



Analysing Education, Labour Markets and Poverty with European Data: Challenges and Opportunities

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Introduction

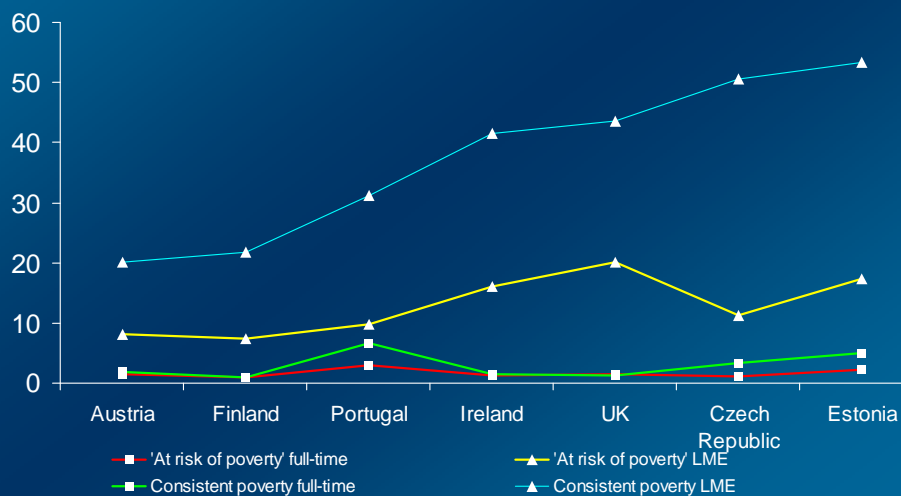
- Angela Dale recently sought to provide a context for research access to microdata.
- Starting point is recognition by researchers that statistical offices have to tread a careful balance between providing the data needed by all sections of society and maintaining the confidence of the general public who supply most of the data.

Use of Microdata to Analyse poverty in Europe

- A number of reasons why researchers need microdata
- Need to explore measurement and modelling issues
- Don't always know what we need in advance.
- Example that follows explores 'at risk of poverty' and consistent poverty approaches in a comparative European context

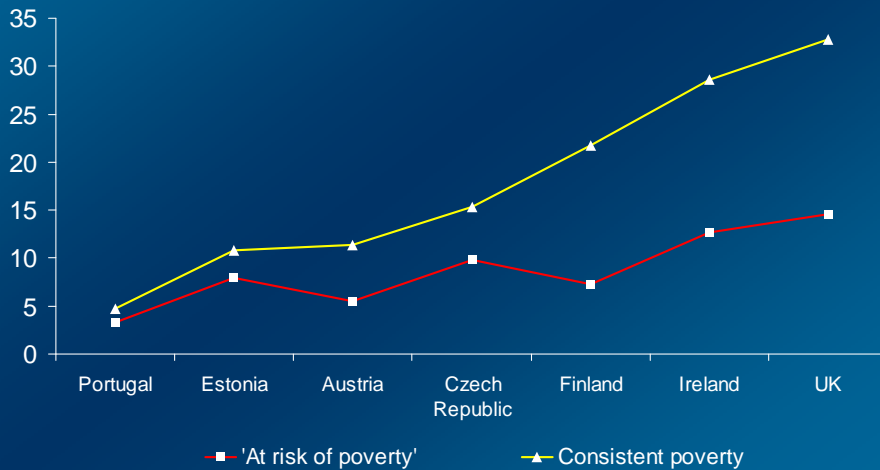


Between Country Variation in the Level of 'At Risk of Poverty' and Consistent Poverty by HRP Labour Market Exclusion (odds ratios relative to HRP full-time employees in Finland).





Cross-national Variation in the Within Country Impact of HRP Labour Market Exclusion on 'At Risk of Poverty' and Consistent Poverty (relative to HRP full-time employed in each country).



Institutional Responses

- Researchers share commitment to confidentiality and have a very strong interest in promoting good practice and respect for research data.
- Development of the appropriate institutional controls
- Relationships of trust between institutions. This would seem to require developing regular forms of interactions between researchers, statistical offices and hopefully policy makers

Poverty Measurement in Ireland

- ESRI has a role going back to 1987
- NDU role in ECHP – building relationships with EUROSTAT
- Access to Irish EU-SILC in the context of contractual arrangements to produce outputs such as the Annual Report on Poverty
- Close liaison with CSO including researchers acting as statistical officers and regular review of procedures.
- Tripartite interaction between ESRI, CSO & OSI and predecessors.
- Complemented at European level by ESRI role in EQUALSOC and contractual arrangements relating to access to EU-SILC

ESRI Contributions to Development of Trust

- Extensive use of data and wide dissemination of results in the public good.
- Careful use and considered interpretation of the data based on in depth knowledge of both data and technical procedures including sampling.
- Serve on NSI advisory (also NSI representative on ESRI council)
- Play advisory and liaison roles in relation to future needs, opportunities and challenges

Usefulness of European microdata for research – the case of education –

- Considerable progress in recent years concerning access to European microdata for researchers.
- The usefulness of microdata for research strongly depends on the detail and international comparability of data.
- This is illustrated for education information in EU-microdata.
- Education is one of the most important elements in proactive social and economic policy, e.g. concerning
 - protecting individuals against poverty
 - enhance equality of opportunity
 - strengthen employability and success of individuals in working life
 - fostering economic productivity and competitiveness
- Valid and well comparable measures of education are essential for valuable research in this area

Data on education available in European Microdata

- National information is usually harmonized into aggregates of the ISCED classification
 - ECHP : 3-level ISCED (0-2 / 3-4 / 5-6);
 - EU-LFS: mostly 3-level ISCED (0-2 / 3-4 / 5-6): in selected years slightly more detailed, but not consistent over years;
 - EU-SILC: 6-level ISCED (1/2/3/4/5/6);
- Neglects other important distinctions in education such as the “general/academic vs. vocational” divide
- Illustrate the serious damage caused by this practice;
 - (1) for the German case
 - (2) for cross-national comparisons
- For details on the following analyses, see Müller/Klein (2008)

Educational Qualifications and their ISCED-coding for Germany

General education qualification	Vocational qualification									
	ISCED	Without or short, preparatory vocational	ISCED	- 3 year dual system or other equiv. vocational	ISCED	Advanced vocational technical	ISCED	Voc. college	Uni	Re-search Degree
Not completed lower second.	1		3B							
Lower second. basic track	2		3B		5B		5A			
Lower second. intermed. track	2		3B		5B		5A			
Upper secondary	3A		4B		5B		5A			6

ISCED 0-2 ISCED 3-4 ISCED 5-6

Educational Qualifications and Occupational Status (ISEI-Index) for men aged 35-55 in Germany; non-standardized OLS-coefficients contrasted to reference category

General education qualification	Vocational qualification									
	ISCED	Without or short, preparatory vocational	ISCED	- 3 year dual system or other equiv. vocational	ISCED	Advanced vocational technical	ISCED	Voc. college	Uni	ISCED 6
Not completed lower second.	1	-1.6	3B							
Lower second. basic track	2	0.0 Ref.	3B	3.5	5B	8.4	5A	22.7		
Lower second. intermed. track	2	5.9	3B	7.4	5B	12.5	5A	25.8 (0.82)*		
Upper secondary	3A	16.3	4B	15.9	5B	19.9	5A	29.7	33.0	41.5

* largest standard deviation; all others below 0.44
 Data Base: SUF-Microcensus 2002-2004; N=83615;
 Controls: Year of Survey, nationality, years of LF-experience, (years of LF-experience)²

Comparing the explanatory power of different educational classifications

- The German case shows large heterogeneity within categories of ISCED codes, especially if no distinction is made between academic / vocational.
- Some of the aggregations make data close to useless for serious research.
- A international team of the EQUALSOC NoE has studied reliability and validity of ISCED 1997 and developed a new aggregation scheme combining the ISCED level distinctions with the 'academic vs. vocational' divide (see Schneider 2008a and Schneider 2008b).
- Schneider's proposal is related to the CASMIN education classification, developed in the 1980es and increasingly used in international social science research (see Koenig et al. 1988; Müller et al. 1990; Brauns/Steinmann 1999).
- For details of the schemes, and how they can be constructed out of detailed ISCED-codes, see the appendix.
- Next we illustrate, how different variants of ISCED-aggregation affect the power of education in explaining various outcomes, (1) for Germany and (2) in cross-country comparisons.

Explained variance and loss of explanatory power with different variants of aggregating educational information for Germany

	Model and measure of expl. variance	Explained Variance with detailed classification
Outcome-Criteria	(1)	(2)*
Children's educational attainment explained by parental education	Log. Regr. Pseudo R ²	0.124
Achieved ISEI-status at age 35-55	OLS Regr. Adjusted R ²	0.454
Hold managerial / professional class position at age 35-55	Log. Reg Pseudo R ²	0.303
Risk of non-employment at ages 35-65	Log. Regr. Pseudo R ²	0.048

* Detailed classification refers to the 15 combinations of general vs. vocational qualifications in previous tables

Explained variance and loss of explanatory power with different variants of aggregating educational information for Germany

	Model and measure of expl. variance	Explained Variance with detailed classification	Explained variance as proportion of column (2)	
			ISECED 3 levels	
Outcome-Criteria	(1)	(2)*	(3)	
Children's educational attainment explained by parental education	Log. Regr. Pseudo R ²	0.124	0.667	
Achieved ISEI-status at age 35-55	OLS Regr. Adjusted R ²	0.454	0.664	
Hold managerial / professional class position at age 35-55	Log. Reg Pseudo R ²	0.303	0.664	
Risk of non-employment at ages 35-65	Log. Regr. Pseudo R ²	0.048	0.639	

* Detailed classification refers to the 15 combinations of general vs. vocational qualifications in previous tables

Explained variance and loss of explanatory power with different variants of aggregating educational information for Germany

	Model and measure of expl. variance	Explained Variance with detailed classification	Explained variance as proportion of column (2)		
			ISECED 3 levels	ISCED 7 levels	CASMIN 8 cat.
Outcome-Criteria	(1)	(2)*	(3)	(4)	(5)
Children's educational attainment explained by parental education	Log. Regr. Pseudo R ²	0.124	0.667	0.751	0.985
Achieved ISEI-status at age 35-55	OLS Regr. Adjusted R ²	0.454	0.664	0.752	0.986
Hold managerial / professional class position at age 35-55	Log. Reg Pseudo R ²	0.303	0.664	0.756	0.988
Risk of non-employment at ages 35-65	Log. Regr. Pseudo R ²	0.048	0.639	0.738	0.960

* Detailed classification refers to the 15 combinations of general vs. vocational qualifications in previous tables

Explained Variance of ISEI occupational status by national educational categories and variants of ISCED-aggregations
(based on European Social Survey ESS 2002-2007)

	National education classification			
	Number of educ. categories	Explained variance R ² of ISEI status (adjusted for DF)		
	(1)	(2)		
France	12	44,8		
Belgium	11	43,0		
Spain	15	44,7		
Denmark	10	38,2		
Netherlands	13	36,6		
Switzerland	15	52,5		
Germany	20	46,4		
Luxembourg	18	51,9		
Poland	10	49,7		
Slovakia	8	43,8		
Rumania	13	46,5		
Czecklands	11	48,9		
Estonia	13	34,0		
Hungary	14	53,6		

Source: own calculations based on Schneider, Silke (2008) "Nominal Comparability is not enough ...", Table 4 (average values from ESS 2002-2007), Oxford, MS.

Explained Variance of ISEI occupational status by national educational categories and variants of ISCED-aggregations
(based on European Social Survey ESS 2002-2007)

	National education classification		Detailed ISCED-97 categories grouped into	
	Number of educ. categories	Explained variance R ² of ISEI status (adjusted for DF)	6 level ISCED categories	
	(1)	(2)	Explained variance as proportion of (2)	
France	12	44,8	78,1	
Belgium	11	43,0	87,3	
Spain	15	44,7	85,1	
Denmark	10	38,2	79,8	
Netherlands	13	36,6	90,3	
Switzerland	15	52,5	77,5	
Germany	20	46,4	62,5	
Luxembourg	18	51,9	82,6	
Poland	10	49,7	86,4	
Slovakia	8	43,8	81,7	
Rumania	13	46,5	44,1	
Czecklands	11	48,9	71,2	
Estonia	13	34,0	81,2	
Hungary	14	53,6	79,9	

Source: own calculations based on Schneider, Silke (2008) "Nominal Comparability is not enough ...", Table 4 (average values from ESS 2002-2007), Oxford, MS.

Explained Variance of ISEI occupational status by national educational categories and variants of ISCED-aggregations
(based on European Social Survey ESS 2002-2007)

	National education classification		Detailed ISCED-97 categories grouped into		
	Number of educ. categories	Explained variance R ² of ISEI status (adjusted for DF)	6 level ISCED categories	8 categories by level and acad. vs. vocational	
	(1)	(2)	Explained variance as proportion of (2)		
France	12	44,8	78,1	97,5	
Belgium	11	43,0	87,3	98,9	
Spain	15	44,7	85,1	98,1	
Denmark	10	38,2	79,8	99,7	
Netherlands	13	36,6	90,3	95,4	
Switzerland	15	52,5	77,5	97,7	
Germany	20	46,4	62,5	96,7	
Luxembourg	18	51,9	82,6	95,7	
Poland	10	49,7	86,4	100	
Slovakia	8	43,8	81,7	99,3	
Rumania	13	46,5	44,1	98,9	
Czecklands	11	48,9	71,2	96,5	
Estonia	13	34,0	81,2	95,7	
Hungary	14	53,6	79,9	99,1	

Source: own calculations based on Schneider, Silke (2008) "Nominal Comparability is not enough ...". Table 4 (average values from ESS 2002-2007). Oxford, MS.

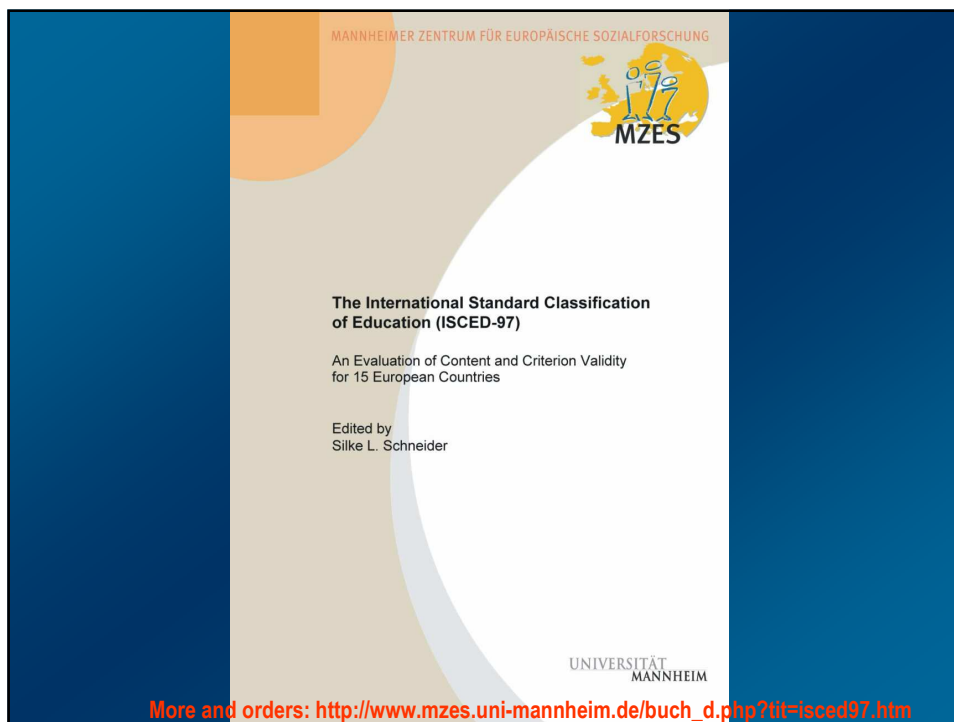
Explained Variance of ISEI occupational status by national educational categories and variants of ISCED-aggregations
(based on European Social Survey ESS 2002-2007)

	National education classification		Detailed ISCED-97 categories grouped into		Years of education
	Number of educ. categories	Explained variance R ² of ISEI status (adjusted for DF)	6 level ISCED categories	8 categories by level and acad. vs. vocational	
	(1)	(2)	Explained variance as proportion of (2)		
France	12	44,8	78,1	97,5	67,1
Belgium	11	43,0	87,3	98,9	53,1
Spain	15	44,7	85,1	98,1	62,3
Denmark	10	38,2	79,8	99,7	65,5
Netherlands	13	36,6	90,3	95,4	58,3
Switzerland	15	52,5	77,5	97,7	70,5
Germany	20	46,4	62,5	96,7	71,0
Luxembourg	18	51,9	82,6	95,7	70,3
Poland	10	49,7	86,4	100	90,6
Slovakia	8	43,8	81,7	99,3	59,6
Rumania	13	46,5	44,1	98,9	81,7
Czecklands	11	48,9	71,2	96,5	78,6
Estonia	13	34,0	81,2	95,7	92,5
Hungary	14	53,6	79,9	99,1	79,8

Source: own calculations based on Schneider, Silke (2008) "Nominal Comparability is not enough ...". Table 4 (average values from ESS 2002-2007). Oxford, MS.

Conclusions

- It is possible to collect and provide data in a more useful way than often done.
- Education information should be collected in all countries in all required details to allow valid representation of relevant educational differentiation.
- EU-databases such as EU-LFS or EU-SILC should include in their microdata releases education codes in the most detailed ISCED-version.
- In addition to the harmonised codes, the dataset should also include the detailed national information in order to
 - allow further validation research to improve international comparability of education measures
 - enable researchers to construct further typologies that are most adequate to the theoretical needs of their research.
- Problems similar to those found for education likely exist in other areas. To improve both data protection and usefulness of data for research and statistical reporting it is urgent to institutionalize further intensive exchange between research data users and data providers.



Appendix

References:

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- Schneider, S. L. (ed.) (2008), The International Standard Classification of Education (ISCED-97). An Evaluation of Content and Criterion Validity for 15 European Countries, Mannheim.
- Schneider, S. L. (2008b), Nominal Comparability is not Enough: An Evaluation of Cross-nationally Comparable Measures of Educational Attainment, Oxford University: Nuffield College, Ms.

ISCED, CASMIN and Schneider's classification
(CASMIN-codes (adapted to the ISCED nomenclature) are indicated below the ISCED-codes; Schneider-codes in the notes, if different from CASMIN)

General education qualification	Vocational qualification									
	ISCED	Without / short or preparat. vocational	ISCED	- 3 year dual system or other equiv. vocational	ISCED	Advanced vocational technical	ISCED	Voc. college	Uni	ISCED 6
Not completed lower second.	1 I	-1.6	3B IIc ^a							
Lower second. basic track	2 IIb	Ref.	3B IIC ^a	3.5	5B IIIb ^b	8.4	5A V1			
Lower second. intermed. track	2 IIa	5.9	3B IIIb	7.4	5B IIIb ^b	12.5	5A V1	25.8		
Upper secondary	3A IIIa	16.3	4B IV	15.9	5B IV	19.9	5A V1	29.7	33.5 V2	40.8 V2

^a by Schneider(2008) classified as IIIb; ^b by Schneider (2008) classified as IV

Data Base: SUF-Microcensus 2002-2004; N=83615;

Controls: Year of Survey, nationality; years of LF-experience; (years of LF-experience)²

Educational Qualification of parents and the odds of their 18 year old children to study in the academic track of upper secondary education (Gymnasium or equivalent) in Germany
(odds-ratios from logistic regression compared to reference category with number of cases in analytical sample used)

General education qualification	Vocational qualification									
	I S C E D	Without or short, preparatory vocational	I S C E D	- 3 year dual system or other equiv. vocational	I S C E D	Advanced vocational technical	I S C E D	Voc. college	Uni	I S C E D 6
Not completed lower second.	1	1 / 1.3 1207 ^a	3B							
Lower second. basic track	2	1.0 3939	3B	1.3 12132	5B	2.2 1895	5A			
Lower second. intermed. track	2	1.7 747	3B	2.1 9324	5B	3.2 2682	5A	7.9 478		
Upper secondary	3A	5.9 273	4B	5.9 1080	5B	5.9 1042	5A	7.0 2409	15.1 4708	

^a Number of cases
Data Base: SUF-Microcensus 1996-2004; N=42109;
Controls: Year of Survey, gender and nationality of child.