Error-corrected status attainment in a European perspective.

An evaluation of status attainment information in the European Social Survey, R1-R4

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European Social Survey, R1-R4

- Biennial survey, 2002-2004-2006-2008. N=1500 effective per country per round.
- Now held in 33 European countries.
- High quality, centrally administered, locally funded and coordinated.
- However, it concentrates on social attitudes.
- Data are freely and easily available from NSD, Norway.

Relevance for stratification research

- The ESS can be a very important source of stratification data, because:
  - Wide and repeated coverage of European countries;
  - High level of harmonization, which make it easy to use, also for a novice;
  - It provides **double indicator measurement**, for parental occupations and respondent's education.

However...

- ... how to handle the double indicator information is not so clear to the uninitiated.
- ... also there turn out to be quite a bit of pitfalls.

Aims of the paper

- To outline **work in progress** on father's and mother's occupations before we can readily use it for social mobility research (with or without error correction).
- Estimate **preliminary** results of measurement quality of (double measured) education and occupation indicators in ESS.
- To produce a **league-of-nations** for Europe with respect to various indicators of social mobility and social reproduction, using a classical status attainment model, with double indicator measurement to correct for measurement error.

Organization of the ESS data

- ESS information is easily accessible. There are fully harmonized files, that can be downloaded by:
  - Round and country
  - Round
  - All four rounds.
- The main data will contain some country specific variables (e.g. for education): these are clearly marked by country akronym, such as: EDLVAT, EDLVBE ... EDLVUA
- If variables definitions have changed, this is marked by an additional characted in the variable name: OCCF14 is replaced by OCCF14a, etc.

Country specific files

- Country specific files contain country specific variables:
  - These may be additional variables collected in the additional write-in questionnaire
  - Or: these may be variables that are not entirely conformable to the format in the main file.
- This includes in many instances information that is relevant to stratification analysts.
- There are country-specific files for each country and each round, so some 90.
- Parental occupations reside in additional country specific files and are mostly uncoded!
- Information in the country specific files is much less organized and harmonized than for the main survey.

Education - respondent

- Education (respondent's) is available in three indicators:
  - EDLVXX (Optional) A country specific measure. This measure is optional and not provided for all countries. Naturally, it varies in detail and contents between countries (and sometimes Rounds).
  - EDULVL: An internationally comparable measure using 0-6 standard main categories from the International Standard Classification of Education [ISCED]. It is usually a many-to-one recode of EDLVXX.
  - EDUYRS: Respondent's estimate of his/her duration of education in "full-time equivalents".

Education: spouse, father, mother

- Education of spouse, father and mother is only provided in 0-6 categories:
  - EDULVLF
  - EDULVLM
  - EDULVLP.

ISCED

- ISCED: International Standard Classification of Educations (OECD, 1997).
- This first digit detailed classification provides the harmonization for the EDULVL measure.
- Note that EISCED is not strictly first digit ISCED.

<table>
<tr><td>Less than primary</td><td>0</td><td rowspan="2">1</td><td rowspan="2">1</td></tr>
<tr><td>Primary</td><td>1</td></tr>
<tr><td>Lower Secondary</td><td>2</td><td>2</td><td>2</td></tr>
<tr><td>Upper Secondary, vocational</td><td rowspan="2">3</td><td rowspan="2">3</td><td>3</td></tr>
<tr><td>Upper Secondary, academic</td><td>4</td></tr>
<tr><td>Post-secondary</td><td>4</td><td>4</td><td>5</td></tr>
<tr><td>Lower Tertiary [BA]</td><td rowspan="2">5</td><td rowspan="2">5</td><td>6</td></tr>
<tr><td>Higher Tertiary [MA]</td><td rowspan="2">7</td></tr>
<tr><td>Post-Tertiary</td><td>6</td><td>5</td></tr>
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Education – differences between rounds

- R1-R3: no major changes (some within-country changes)
- R4: introduced country specific measures for father, mother, and spouse (for some countries).
- 2011 revision (of R1-R4):
  - Removed EDULVL → EDULVLa (7 → 5 categories) for all previous rounds.
  - Introduced EISCED (7 categories, for some countries):
    - R4: resp, partner, father, mother
    - R1-3: only resp.

Problems with the ESS education measures

- EDLVXX indicators are not provided by every country and are only occasionally used because they are not standardized. However, Schneider et al. have used them as a "gold standard" to assess problems in the internationally comparable measures.
- EDULVL [ISCED] is heavily used, but problematic because its lack of detail (and comparability).
- EDUYRS (duration) is regarded as problematic because it lack of sensitivity to level of education in non-comprehensive, tracked systems (that are widespread in Europe).

Schneider et al.

- Schneider et al. show:
  - ... that major problems occur in the way ESS coordinators have converted local education measures into EDULVL;
  - ... that even if corrected, EDULVL reduces explained variance in occupation considerable, relative to EDLVXX, and in different degrees in different countries;
  - ... But EDUYRS [duration] is even worse in explaining occupationat attainment.
- Schneider (2009) has proposed a new internationally harmonized classification that would mitigate these problems. [This is implemened in Round 5.]

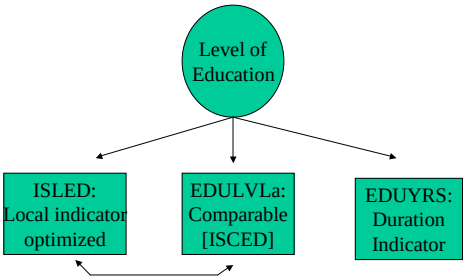
Our proposal on education

- It is better to profit from the fact that ESS employs multiple indicator measurement: the information on type of education and duration is independently obtained.
- EDLVXX can be used in a multiple indicator model in an optimal score format: this will leave all detail intact: ISLED.

ISLED

- International Standard Level of Education
- Schröder & Ganzeboom, 2010
- http://www.harryganzeboom.nl/ismf/isled/isled.htm.
- Locally optimized scores for all education categories in the ESS.
- Optimization: with respect to education as an intervening variable between family background and attained status.

Multiple indicator model for the measurement of occupation



Results

- Schröder & Ganzeboom (2009) have estimated the measurement qualities of the ESS education measures:
  - In a full status attainment model, the loss incurred by compressing EDLVXX into EDULVL is only modest (0%-5%).
  - The loss incurred by using duration is larger: 10%-15%.
  - However, employing two measures in a multiple indicator model informs that relative to the true score, the loss in EDLVXX (optimized) is still around 10%.

Occupation: respondent and spouse

- Respondent's current/last and spouse's current occupation is measured in an open-ended question and coded in 4-digit ISCO-88.
- Question format and coding are left to the national coordinators; there is no check on the quality of coding; the strings are not deposited in the archive.
- Additional variables on employment status include:
  - Industry (open ended)
  - Self-employmen with firm size
  - Supervisory status and number of subordinates.

Occupation: father and mother

- Father's and mother's occupations, when respondent was 14 years of age, have been asked:
  - In an open ended question; these strings are not coded but have been archived and are available in country specific files;
  - In an closed (crude) format, using a cross-nationally standardized showcard.
- Additional variables on status in employment include father's and mother's self-employment and supervisory status (but not industry and firm size).

ESS R1-R3 showcard

1. Traditional professionals
2. Modern professionals
3. Clerical and intermediate
4. Senior manager and administrator
5. Technical and craft
6. Semi-routine manual and service
7. Routine manual and service
8. Middle and junior managers

ESS R1-R3 showcard:problems

- The showcard ESS used for father's and mother's occupation in a crude way is quite problematic:
  - ... It uses vague language ('modern professionals')
  - ... It omits relevant categories, in particular farm
  - ... It is out of rank order.
- In Round 4 the showcard has been replaced by a showcard modeled upon ISSP 1987, that avoids some of these problems.
- However, even in its present stage it is an independent parallel measure of occupational status on two separate, but related occupations: this allows for MTMM model with correction of random and systematic measurement error.

ESS R4 showcard

1. **Professional and technical** occupations, such as: doctor – teacher – engineer– artist – accountant
2. **Higher administrator** occupations, such as: banker – executive in big business – high government official – union official
3. **Clerical** occupations, such as: secretary – clerk – office manager book keeper
4. **Sales** occupations, such as: sales manager – shop owner – shop assistant – insurance agent
5. **Service** occupations, such as: restaurant owner – police officer – waiter –caretaker – barber – armed forces
6. **Skilled** worker, such as: foreman – motor mechanic – printer – tool and die maker – electrician
7. **Semi-skilled** worker, such as: bricklayer – bus driver – cannery worker – carpenter – sheet metal worker – baker
8. **Unskilled** worker, such as: labourer – porter – unskilled factory worker
9. **Farm** worker, such as: farmer – farm labourer– tractor driver– fisherman

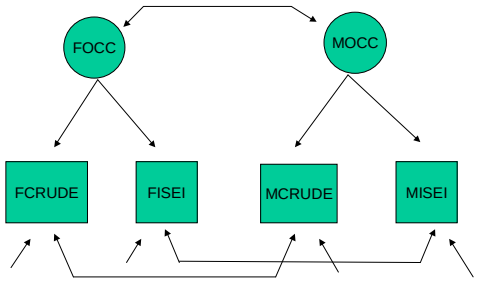
ESS R4 showcard

- Copied from ISSP 1987.
- Follows broadly major group classification in International Standard Classification of Occupations [ISCO].
- Maintains manual / non-manual / farm distinction.
- Maintains skill distinctions

Coding father's and mother's occupation

- Together with colleagues, friends and paid assistants I have begun to code all parental occupations of ESS Round 1-2-3-4.
- There are 292135 occupations to code (in some 25 languages); we have completed around 89.3% (of which 12.0% are improductive).
- I have collected all this information in "coding files" by country, which allows for easy transfer of earlier coded occupation to new information. **I need more friends.**

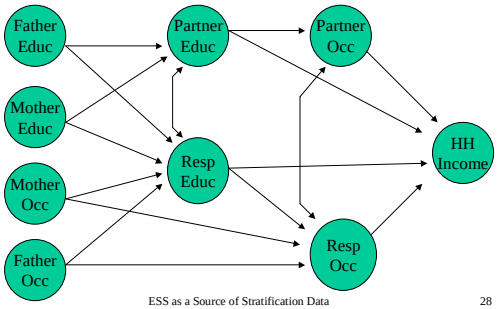
Multiple indicator model for the measurement of occupation (MTMM)



MTMM-model

- Allows for estimation and correction of random and systematic measuremen error.
- Identification:
  - Impose inequality constraints on father's and mother's measurement model.
  - Only identified with additional variables in status attainment model.
- Results:
  - The crude questions are in some countries bad measures, but in other countries just as good as the detailed ones.

A fully error-corrected SAT model (structural part)



A fully error-corrected SAT model (measurement part)

- Empirical error correction (using double measurement) only available for:
  - Father's and mother's occupation (random + systematic measurement error)
  - Respondent's education (only random error).
- We generalize this to the other variables in the model:
  - Father's, mother's & partners education
  - Respondent's & parner's occupation.

Structural specifications

- Parents' educations influence respondent's and partner's education.
- Parents' occupations influence respondent's occupation (but not spouse's).
- Father's and mother's structural effects constrained to be equal.
- No direct effects of respondent's and spouse's educations on household income.

Measurement specifications

- Random error is the cross-national indicator for education of respondent, spouse, father and mother [ISCED] is constrained to be the same and estimated from the respondent's info.
- Random errors in detailed indicators for occupation of respondent, spouse, father and mother are constrained to be the same and estimated from father's and mother's info.
- Random errors crude indicators for occupation of father and mother are constrained to be the same.
- Systematic (correlated) errors in crude measures for father's and mother's occupation are allowed.

Data

- Only country / rounds with coded detailed parental occupations.
- Men and women age 25-64.
- N=130156, 33 countries.
- Pairwise deletion of missing values, FIML estimates.
- All variables are standardized <u>within</u> country.

Results – measurement

- Full multiple indicator model can now be estimated for 33 countries.
- Measurement model education:
  - ISLED around 0.958
  - EDULVL around 0.928
  - EDULVLa around 0.897
  - Duration around 0.864
- Measurement model occupation (random):
  - Crude: around 0.748
  - Detailed: around 0.817

Results: structural coefficients

- Correction for measurement error makes countries more similar to one another.
  - Intergenerational occupational correlation: 0.45
  - Hardly any direct effect of parental occupation remains (0.05)
  - Education-occupation link is very strong: 0.756

  → Variation in intergenerational occupational mobility is almost entirely driven by educational reproduction

League of European nations?

- Intergenerational occupational correlation:
  - Highest: Luxemburg, Spain, Italy, Hungary
  - Lowest: Norway, Finland, Estonia, Sweden, Ukraine, Russia
- Explained variance in education:
  - Highest: Luxemburg, Spain, Italy, France
  - Lowest: Ukraine, Finland, Estonia, Norway, Russia, Sweden,
- Direct effect of parental occupation on resp's occupation:
  - Very little variation. All < .10.

Round 5

- Data for Round 5 (2010) have recently been released for 20 countries.
- No new countries.
- No changes how occupations were measured relative to Round 4.
- Parental occupations are not coded (yet..).
- Education measures are dramatically revised. This requires a separate assessment.

Conclusions

- ESS can be quite an important database, but:
  - Within-country results are not stable at this point – further analysis needed.
  - Occupation coding not yet completed.

HELP NEEDED

Thank you, my friends!

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- Carolina Zuccotti
- Paul Lambert
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- Adriana Duta

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- Dace Dzeguze
- Semiha Bekir
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- Evelina Karpėjūtė
- Anna Kmetova

Still help needed …

- Icelandic
- Slovenian