

How constant is the Treiman constant?

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Conclusions

- The Treiman constant is not about occupational prestige, but rather about SEI.
- The Treiman constant is pretty constant.
- The paper develops an exact measure of deviation from constancy = 1.0. Some early results (for Suriname) suggest a deviation as large as 7-9%, but the new results (in Europe) suggest the deviation is much closer to 0%.

The Treiman constant

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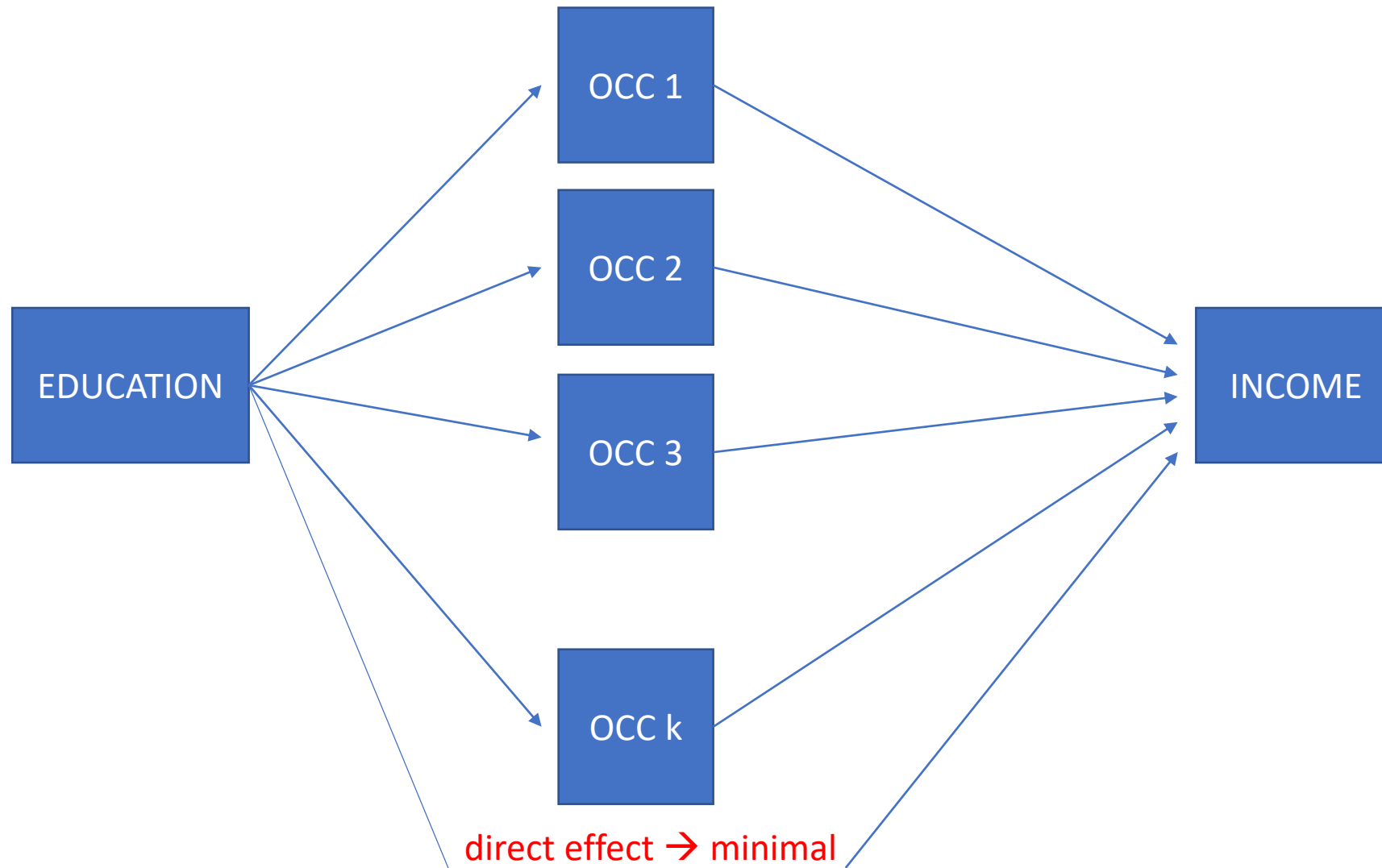
- Treiman (1977: 183): *“occupational prestige hierarchies are substantially similar throughout the world”*.
- Hout & DiPrete (2006: 2-3): *“Occupations are ranked in the same order in most nations and over time”; “the Treiman constant may be the only universal sociologists have discovered—not just in stratification but sociology as a whole”*.
- Evidence: Prestige rankings of occupations correlate around 0.90 between – very – different societies and historical periods.

Treiman's explanation

- Prestige similarity reflects “similarity in skills and privilege between occupations”, which Treiman understands as education and earnings.
- Treiman's explanation thus refers to the socio-economic theory of occupational status attainment – SEI model:
 - Universal technological requirements determine required skill level of occupations.
 - Universal market mechanisms determine earnings level of occupations.
- However, prestige scaling of occupations differs from SEI scaling because of its **honorific** component. Cf. the waitress and the prostitute.
- → SEI hierarchies should be even more similar between societies than (net) prestige hierarchies.

The SEI model

SEI optimal scaling model



SEI

- Occupation == the mechanism that transfers your education into earnings.
- Note that the SEI optimal scaling model (unlike Duncan's (1961) procedure) makes NO reference to prestige.
- The scaling is obtained as a 'path-als' optimization problem (developed by De Leeuw (1992)).
- Substantively, this is still identical to what Duncan (1961) did: averaging occupational earnings and occupational educational requirements.

ISEI-68 and ISEI-88

- ISEI-68 and ISEI-88 were constructed on ISCO-68 and ISCO-88 data using optimal scaling of indirect effect EDUC → OCC → INC.
 - ISEI-68 (Ganzeboom et al. 1992) used data on 70.000 men from the International Stratification and Mobility File)
 - ISEI-88 (Ganzeboom & Treiman, 1996) used data on 140.000 men from the ISMF.
 - Note that different samples were used; choice depended upon the presence of ISCO-68 or ISCO-88 codings (often converted from national classifications).
- Despite the presence of social mobility data, the construction of ISEI did not use parental (nor spouse's) occupations.

Sources

- Ganzeboom, Harry BG, Paul M De Graaf, and Donald J Treiman. 1992. “A Standard International Socio-Economic Index of Occupational Status.” *Social Science Research* 21 (1): 1–56. [https://doi.org/10.1016/0049-089X\(92\)90017-B](https://doi.org/10.1016/0049-089X(92)90017-B).
- Ganzeboom, Harry BG, and Donald J Treiman. 1996. “Internationally Comparable Measures of Occupational Status for the 1988 International Standard Classification of Occupations.” *Social Science Research* 25 (3): 201–39. <https://doi.org/10.1006/ssre.1996.0010>.
- Ganzeboom, Harry BG. 2010. *A New International Socio-Economic Index [ISEI] of Occupational Status for the International Standard Classification of Occupation 2008 [ISCO-08] Constructed with Data from the ISSP 2002-2007; with an Analysis of Quality of Occupational Measurement in ISS. [Working Paper]*. Amsterdam: Departmen of Social Reserarch Methodology VU University.

ISCO-08

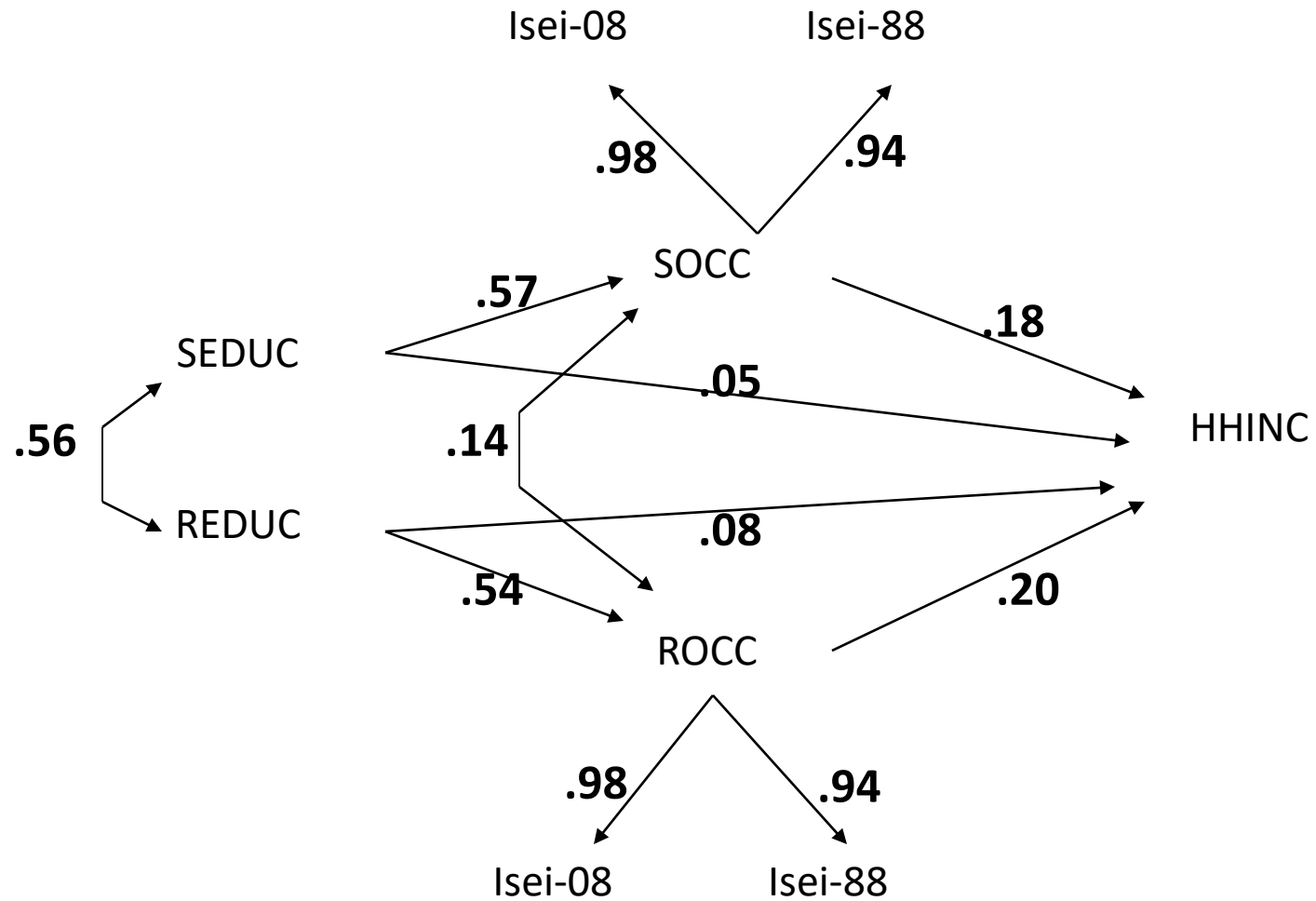
- In 2011 (effectively) ILO launched the new International Standard Classification of Occupations 2008 (ISCO-08).
- ISCO-08 is a 'minor' upgrade from the former ISCO-88:
 - 10% more distinctions made
 - Major group (first digit) structure remained nominally intact; however, as sub-major and minor groups are shifted between major groups, this does not imply 100% equivalence at the major group level.
 - About 70% of all unit groups ('occupation') have a one-to-one mapping between ISCO-88 and ISCO-08.
- ISCO-08 contains some striking revivals from the earlier ISCO-68: Manual Supervisors is the most striking one.

Provisional ISEI-08 construction

- Ganzeboom (2010) presented a provisional version of ISEI-08 using data on 200.000 men **and women** in 42 countries in ISSP 2001-2007.
- These ISSP data contained only ISCO-88 (!!) coded occupation data. ISCO-08 was obtained by **converting** ISCO-88 into ISCO-08, using a 'best one-to-one mapping'. Further adaptations were made in two instances:
 - Manual Supervisors were created using information on supervising status.
 - Shopkeepers and Farmers were created using information on self-employment.
- Ganzeboom (2010) also proposed a validation model to compare the quality of the ISEI-88 and ISEI-08 scales using fresh data from the ESS which is essentially an MTMM model. Measurement coefficients: 0.94 and 0.98.

The validation model

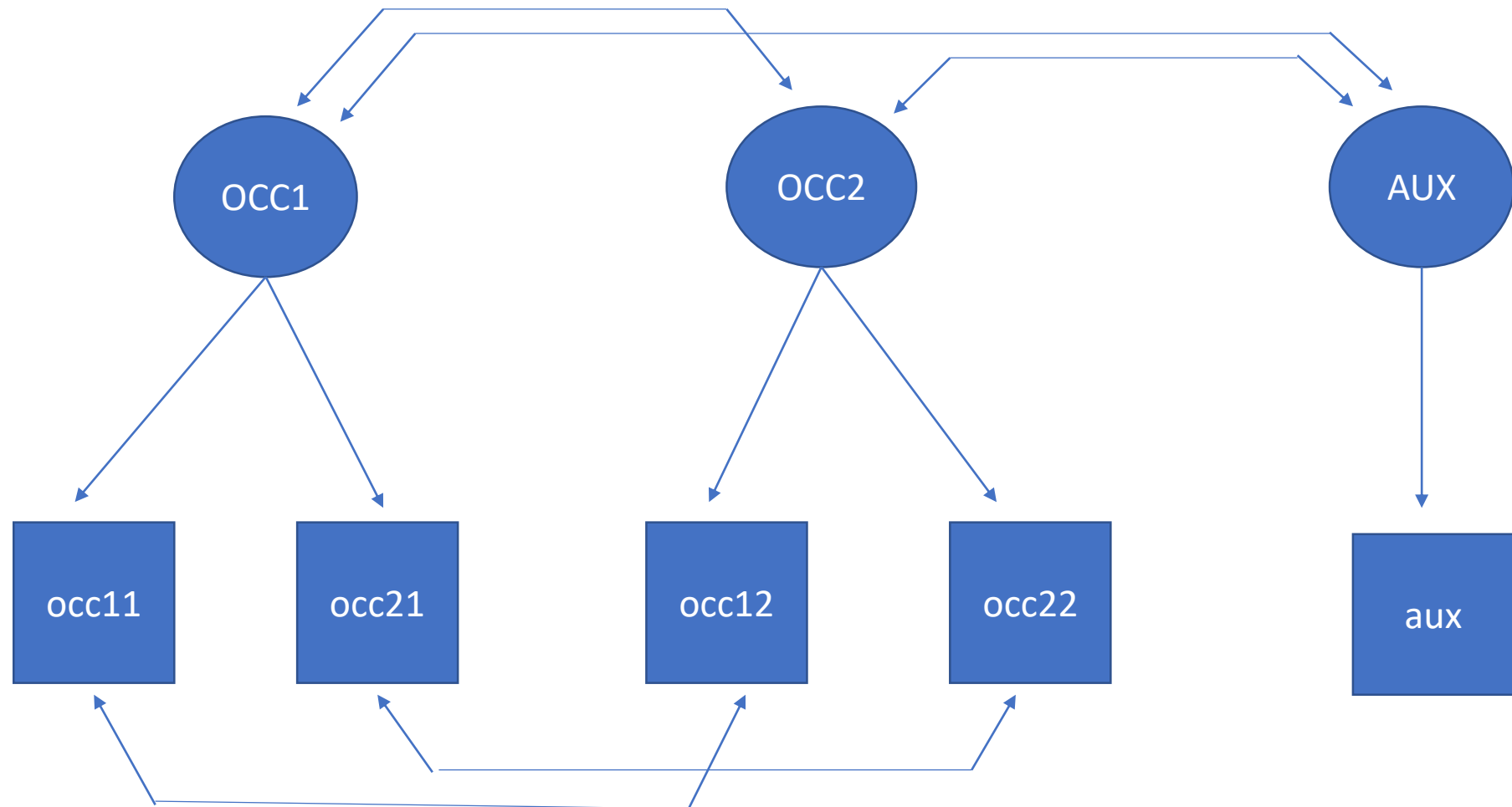
ESS validation model (Ganzeboom, 2010)



The validation model

- Uses fresh data to compare the quality of (two) different (new, old) measures.
- The model has multiple occupations: respondent – spouse. (This could be expanded with parental occupations.)
- The model estimates the quality of measurement using **two** social processes: $EDU \rightarrow OCC \rightarrow INC$ (status attainment), and $OCC \leftrightarrow SOCC$ (occupational homogamy).
- Model is equivalent to MTMM model with auxiliary variables.

MTMM model with auxiliary variables



Testing the Treiman constant / estimating the loss of information when using the Treiman constant

- The (MTMM) validation model gives a direct estimate of the loss of information when using the Treiman constant, and a test.
- Measure 1: cross-national scaling;
- Measure 2: country-specific scaling.

Early results on Suriname

The occupational stratification of Suriname

- Sno & Ganzeboom (2017) developed a SR-SEI for Suriname, and compared it to ISEI-88 using an MTMM validation model.

	ISEI-88	SR-SEI
Measurement	0.88	0.96

- This implies that any correlation with occupational status in Suriname is underestimated with 9% ($0.88/0.96$), when estimated with ISEI-88 in stead of the country-specific Surinamese scale.
- This is a direct answer to the question: how constant is the Treiman constant?

Redesigning the ISEI-08 measure

What has changed with ISCO-08?

- Many more (international and national) data are now published with ISCO codes: ISSP, ESS, EVS, GSS and many more: there is no longer a need to use conversions.
- ISCO-08 has been adopted by these projects, although the amount of pertinent data is still limited. E.g. ESS and ISSP changed to ISCO-08 in 2014 (2-3 rounds).
- Basing ISEI scores on men only has become (more) unacceptable.

Research Design to develop a new ISEI-08

- ISSP data 2014-2017:
 - 194.687 men and women from 41 countries. Reduces to 93.125 for the effective sample.
 - Worldwide coverage of countries.
 - Occupations (respondent and spouse) directly coded in ISCO-08.
 - Direct measure of personal income (which we assume to be occupational income for those actively employed at time of survey).
 - Detailed (country specific) education codes.
- Limitations / problems:
 - Effective sample may be too small.
 - There is quite a bit of variation in quality of the ISSP data, also in occupation coding (Ganzeboom, 2010).

Research questions

- Aim: construct ISEI-08 scale on 'worldwide representative', ISCO-08 coded data.
- Generalize the new scale to ISCO-88 and ISCO-68 by conversion of the occupation codes.
- Compare quality of new scale to ISEI-88 and ISEI-68 using an MTMM validation model (with multiple occupations) on fresh data.
- Cross-national vs country specific versions of the scale (the 'Treiman constant'): how much difference does it make?

Steps

- Step 1a: Harmonize income data:
 - Divide by country-year specific mean and take logarithm
 - Standardize within country-year → ZLNPINC
- Step 1b: Harmonize education data
 - Standardize qualifications and duration by country-year.
 - Average qualifications and duration, and standardize with country-year → ZEDUC.
- Step 2: Define ISCO codes at most detailed (four digit) level. If $N < 20$, merge with contiguous categories.
- Step 3: Apply search algorithm to find optimal scaling. Step out when direct effect ZEDUC → ZPINC reaches minimum.
- Step 4: Generate 10..90 metric by applying anti-logistic transformation.
- Step 5: Generate ISEI-08 scores for 3-, 2-, and 1-digit groups by aggregation.

Cross-national results

Cross-national solution

- Effective sample: N=93.125 men and women, 41 countries.
- Selections:
 - Age 21-64
 - WRKHRS > 12
 - Valid data on occupation (ISCO-08), education and personal income.
- Ca. 370 occupation unit groups with N > 20. 40 groups (N < 21) are merged with similar groups.
- Algorithm converges at $p = 0.35$ (education weight) and $1-p = 0.65$ (income weight).
- Temporarily: unit of measurement are Z-scores.

Comparison with provisional ISEI-08

- Results from MTMM validation model:

		ISEI-08t	ISEI-08
• ISSP	2014-2017	0.96	0.99
• ESS	2014-2016	0.94	0.87

This pattern does not change very much when leaving out countries from the validation model.

- ***The provisional scale works better than the new one!!*** This is hard to explain...

Country-specific results

How is a country-specific SEI defined?

- #1: use a country-specific measure of education.
- #2: (there seems to be no equivalent for this for earnings).
- **#3: use country-specific scalings of occupation by education and earnings.**
- #4: use country-specific weights for averaging the education and income scaling of occupations.

For the time being, we only use #1 - #3, not #4.

Complications

- The reliability of the scaling is of course dependent on the number of cases per occupation. In earlier work, the minimum N was set at $N > 20$. If an occupation has fewer incumbents, the group is merged with a neighbouring group.
 - A country-specific SEI is estimated on much cruder data than a cross-national ISEI.
- Developing country-specific scale is one thing, applying them in a fresh data set such as ESS is quite another matter.

Comparison between new cross-national and country-specific ISEI-08

- Results from MTMM validation model (based on 10 countries):

		ISEI-08	ISEI-08cs
• ESS	2014-2016	0.954	0.953

- ***Country-specific scaling does not improve measurement quality.***
- Plausible interpretation: Country-specific scaling brings in additional random error (smaller occupation groups), which wipes out the potential gains of country-specific scaling.

Conclusions

Conclusions & Discussion

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- The Treiman constant is pretty constant.
- The paper develops an exact measure of deviation from constancy = 1.0. Some early results (for Suriname) suggest a deviation as large as 9%, but the new results (in Europe) suggest the deviation is much closer to 0%.
- However, I may not have to right research design to test the Treiman constant.