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Recalculating variables of social stratification 1999–2006: development and results of the plausibilization of November 2007

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In the data files distributed on the annual CD, the SHP provides a series of variables for social position (cf. documentation provided by the Panel about this), both for the respondent himself (files SHP_P_$$ and SHP_LJ), and for his parents (SHP_SO).

These variables, based on the theories developed in particular by Wright, Treiman, Erikson and Goldthorpe, are based on several indicators, i.e.

The current profession

- P$$W28 following the Swiss Federal Statistical Office (SFSO) typology and/or ISCO IS1(2,3,4)MAJ$$ typology for the current job.

Type of job

- P$$W29 or P$$W29A and P$$W29B depending on the years[1] for the current job

The number of employees working for self-employed (individual firm or limited company)

- P$$W31 for the current job

The hierarchical position in the case of employees

- P$$W34 or P$$W34A depending on the years[2] for the current job

The level of education

- EDUCAT$$ for those interviewed individually.

By collecting information in successive waves we have revealed problems with several of the above-mentioned indicators, and these have obvious repercussions on the distribution of the variables of social stratification.

[1] Changes due to harmonization with the SILC pilot project.

[2] Changes due to harmonization with the SILC pilot project.

1. Current profession

Between W1 and W4 those working were asked their current profession (P$$W28); this practice was changed, owing to the high number of changes of profession, even for those whose job had manifestly remained the same. From wave 5 the profession identified in the previous wave was reintroduced at the interview and confirmed. We then carried out a general plausibilization after the event of the professions over the period from W1 to W5 in order to avoid artificial variations that would subsequently have had an impact on the variables of social stratification.

2. Type of job

The problems encountered also concern the type of job; the information was collected differently from year to year, in a single question (P$$W29[3] from W1 to W5, and W8), or in two successive questions (P$$W29A[4] and P$$W29B[5]) in W6 and W7. This was because we wanted to harmonize them with the pilot study of the SILC project.

The following table[6] shows that the distribution of the type of job through the various waves is not plausible. The fluctuations in the category 'employees of their own limited company', whom I call here 'employee-owners', are far too large, extending from 3% to 17% depending on the year, and from 3% to 14% between W1 and W5 and W8, when the formulation is strictly the same.

Distribution of the type of job (P$$W29) from W1 to W8 – SHP_I and SHP_II

	W1	W2	W3	W4	W5	W6	W7	W8
1 employed by private household (house-worker, baby-sitter)	1.3	0.9	0.7	1.2	1.4			2.3
2 employee of own public limited or limited liability company	3.4	11.9	13.6	8.9	5.6	16.7	16.2	10.4
3 self-employed	11.1	11.0	10.7	10.9	10.2	12.4	12.6	10.8
4 partner in his/her relative's firm	3.8	2.6	2.4	2.8	3.0	3.7	4.0	3.2
5 employee of another private firm or government organization	80.3	73.6	72.6	76.2	79.9	67.2	67.2	73.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	5093	4733	4403	3811	3501	5536	4485	4513

Data not weighted

Furthermore, combining the categories 'employee-owners', 'self-employed' and 'employee of a family business' covers 33% of working individuals in W6 and W7, which is obviously absurd.

[3] In your CURRENT job, are you employed by a private household (houseworker, baby-sitter, ...), an employee of a Public Limited Company or Limited Liability Company which belongs to you, self-employed, partner in your relatives' firm or employee of another private firm or state firm?

[4] In your CURRENT job are you self-employed, employed (including in a family business), or do you work for the family business without remuneration?

[5] If employed at P$$W29A - are you employed by a limited liability company (Ltd.) that belongs to you, by a company that belongs to your family, or another private or public company?

[6] The way the question was formulated changed in W6 and W7 to harmonize them with the SILC pilot project, dividing the question into two parts (P$$W29A and P$$W29B). The table shows a reconstruction of the variable for W6 and W7. This explains in particular why the category individuals employed by a private household disappeared in W6 and W7 (code1). The original question used from W1 to W5 was then reintroduced from W8. The other categories remain unchanged after reconstruction.

The problem was first attributed to the new way of formulating the variable P$$W29 in two questions (P$$W29A and P$$W29B in W6 and W7); this explains why we went back to the original formulation (P$$W29) in W8 at the end of the combined SHP-SILC data collection. Despite that, even the data for W8 did not appear very plausible (10% employees of their own company; 24% self-employed, all categories combined).

So, for wave 9, the interviewers were briefed better on this specific point. In addition, the data from the previous wave have been reintroduced in the interview and confirmed in order to ensure maximum longitudinal consistency of responses.

What already appears as an anomaly in cross-sectional studies shows up even more obviously if we examine transitions from one wave to another. The following table compares the type of job in the previous wave with the type of job in the current wave for all combined waves, but solely for individuals who have not changed jobs or employer during each transition; we would therefore expect a minimum number of changes.

Combined transitions of the type of job from W1 to W8 – individuals who have not changed jobs or employer – SHP_I and SHP_II

	typemp_1 type of employment at previous wave				
typemp type of actual employment	employed by private household (house-worker, baby-sitter)	employee of own public limited or limited liability company	self-employed	partner in his/her relative's firm	employee of another private firm or government organization
employed by private household (house-worker, baby-sitter)	23.9	0.1	0.9	2.9	0.3
employee of own public limited or limited liability company	3.7	31.8	4.2	6.7	10.9
self-employed	11.0	2.9	81.8	21.5	1.3
partner in his/her relative's firm	6.4	1.4	5.0	43.2	0.9
employee of another private firm or government organization	55.0	63.8	8.2	25.8	86.5
Total	100.0	100.0	100.0	100.0	100.0
n	109	2396	2550	586	15655

Cramer's V: .49, p.<.001

It can be seen from the above table that, for all transitions combined, only 32% of the 'employee-owners' are in the same category in the following wave. We can also see that 11% of the employees are, in the following wave, in the category 'employee-owners'. In general, the link between the type of job in successive waves is much lower than what we would expect (Cramer's V of .49, p.<.001) and the data provided lack stability.

The detail of the transitions from wave to wave[7] do not change anything in the general findings; the question is obviously problematic and despite the fact that it is formulated in exactly the same way as the question used by the ESPA (SFSO), a large number of employees wrongly claimed, and were above all inconsistent over time, that they were the owners of their company.

3. Variables of social stratification

The above-mentioned problem has obvious repercussions on the variables of social stratification; 'employee-owners' are considered to be self-employed and are therefore included in the category of top management, the liberal professions or other self-employed, if we use the SPC (socio-professional categories), or are divided into employers and 'middle classes' if we use the typology inspired by Wright.

The misunderstanding of the question about the type of job (P$$W29) appeared quite obviously in waves 6 and 7; the fact that roughly 16%–17% of working individuals declared that they were 'employee-owners' immediately attracted our attention, given that the combined self-employed categories came to 33%. The problem was attributed to the new way of formulating the variable P$$W29 in two questions (P$$W29A and P$$W29B in W6 and W7); for this reason the employees that referred to themselves as owners of their company were considered to be employees in these two waves.

So for the CDs W1 to W7, the construction of variables of social stratification is mixed, and the data for the type of job were used as collected for the first five waves and corrected for W6 and W7.

The following table shows the distribution of SPCs provided on the CDs distributed up to now (W1 to W1–W7).

Distribution of SPCs from W1 to W7 – CD W1–W7 – SHP_I and SHP_II

CSPMAJ$$ Swiss socio-professional category: Main job							
	W1	W2	W3	W4	W5	W6	W7
1 top management	1.1	2.5	2.6	4.7	3.2	0.8	0.8
2 liberal professions	1.8	2.4	2.1	1.9	1.8	1.8	2.1
3 other self-employed	15.9	20.6	21.9	16.3	14.1	14.1	14.2
4 academic professions and senior management	12.5	11.2	12.4	12.7	13.4	15.1	15.4
5 intermediate professions	25.7	23.7	22.6	24.9	28.0	28.3	27.7
6 qualified non-manual professions	24.6	22.7	22.0	22.8	22.9	23.1	22.2
7 qualified manual professions	7.0	6.2	6.0	6.1	6.3	6.8	6.5
8 unqualified non-manual and manual workers	11.4	10.7	10.2	10.8	10.3	9.9	11.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	4741	4423	4106	3564	3303	5186	4253

Data not weighted

Despite the correction made to W6 and W7, we can see excessive fluctuations, in particular for the category 'top management' (1% to 5%) and for the 'other self-employed' (14% to 22%).

[7] Cramer's V from .46 to .60, p.<.001, depending on transitions, for individuals who have not changed jobs or employer.

In addition, from a longitudinal point of view, the combined transitions from W1 to W7 for individuals that have not changed either job or employer, show a large number of inconsistencies between the socio-professional category of the previous wave and that of the current wave.

So only 38% of the 'top managers' in the previous wave are in the same category one year later; the same is true for only 75% of the 'liberal professionals'. Overall, the link (Cramer's V) between the successive socio-professional categories is .70 (p.<.001).

Combined transitions of SPCs from W1 to W7 – individuals who have not changed jobs or employer – SHP_I and SHP_II

	top management	liberal professions	other self-employed	academic professions and senior management	intermediate professions	qualified non-manual professions	qualified manual professions	unqualified non-manual and manual workers
top management	38.0	2.2	1.7	1.8	1.7	1.3	2.0	1.4
liberal professions	1.5	75.4	0.2	3.0	0.1	0.0	0.0	0.0
other self-employed	5.3	1.4	71.4	2.4	7.1	6.1	8.9	8.0
academic professions and senior management	10.6	19.3	2.1	79.8	5.6	1.6	1.0	0.7
intermediate professions	21.4	1.7	10.5	10.3	76.9	9.3	8.3	4.9
qualified non-manual professions	14.6	0.0	7.5	1.8	5.6	81.0	3.2	3.2
qualified manual professions	5.3	0.0	3.1	0.5	1.7	0.4	76.4	1.6
unqualified non-manual and manual workers	3.3	0.0	3.5	0.3	1.4	0.2	0.1	80.2
total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	397	358	2872	2341	4459	3701	1030	1522

Cramer's V: .70, p.<.001; data not weighted

The data for W8 led us to rethink this solution of a mixed construction as the distribution of the type of job (P$$W29), despite the shift back to the original question, proved to be implausible (10% employees of their own company; 24% self-employed all categories combined).

3.1. Recalculating variables of social stratification

After a series of tests on the cross-sectional distributions and the longitudinal distributions we decided to standardize the calculations for variables of social stratification for all waves and all types of job[8], considering employees of their own company to be employees, since this category of 'employee-owners' gave rise to problems.

It should be explained that the algorithm for constructing variables of social stratification also uses the profession, so this arbitrary correction of the information provided might lead to a slight underestimate of the proportion of top managers but

[8] Current job, last job, father's or mother's job in the 'social origin' module.

most of them are nevertheless classified in this category on account of their professions (top manager, director, manager, etc.).

From a cross-sectional point of view, if we consider the SPCs, the fluctuations of the various categories are much less important than before, with in particular the proportion of 'top managers' that remains around 1% (compared to between 1% and 5% before) and the proportion of 'other self-employed' fluctuates between 12% and 14% (compared to between 14% and 22% before).

Distribution of SPCs from W1 to W8 – new calculation method – CD W1–W8 – SHP_I and SHP_II

CD W1–W8								
CSPMAJ$$ Swiss socio-professional category: Main job								
	W1	W2	W3	W4	W5	W6	W7	W8
1 top management	0.8	0.7	0.7	0.9	0.8	0.8	0.8	0.6
2 liberal professions	1.5	1.6	1.4	1.5	1.5	1.8	2.1	2.0
3 other self-employed	13.3	12.1	11.9	12.1	11.7	14.1	14.2	12.1
4 academic professions and senior management	12.9	12.1	13.4	13.3	14.0	15.1	15.4	14.6
5 intermediate professions	26.2	26.8	26.9	27.3	29.4	28.3	27.7	28.9
6 qualified non-manual professions	26.1	26.7	26.4	25.7	24.7	23.1	22.2	23.6
7 qualified manual professions	7.4	7.7	7.5	7.1	7.0	6.8	6.5	7.2
8 unqualified non-manual and manual workers	11.9	12.2	11.8	11.9	10.9	9.9	11.0	11.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	4747	4454	4147	3581	3311	5186	4253	4254

Data not weighted

Again, from a cross-sectional point of view, there is a very close correlation between the new variables of social stratification and the previous ones because the change only actually affects the 'employee-owners'. We notice that the Treiman (TR1MAJ$$) and CAMSIS (CAIMAJ$$) scales are not affected because of the way they are constructed. The same is true for W6 and W7, as the correction had already been made to the type of job.

Correlation between new and previous calculations for variables of social stratification

	W1	W2	W3	W4	W5	W6	W7
correlation CSPMAJ$$ - Cramer's V	0.95	0.85	0.84	0.88	0.90	1.00	1.00
correlation WR3MAJ$$ - Cramer's V	0.92	0.84	0.83	0.87	0.89	1.00	1.00
correlation GLDMAJ$$ - Cramer's V	0.96	0.91	0.90	0.93	0.94	1.00	1.00
correlation TR1MAJ$$ - Pearson's r	1.00	1.00	1.00	1.00	1.00	1.00	1.00
correlation CAIMAJ$$ - Pearson's r	1.00	1.00	1.00	1.00	1.00	1.00	1.00

From a longitudinal point of view, the change is just as convincing; with all transitions combined for individuals that have not changed either job or employer, the link between the previous and the current socio-professional position becomes considerably stronger (Cramer's de .70 à .82, p.<.001) with the new calculation method.

Combined transitions of SPCs from W1 to W8 – new calculation method – individuals who have not changed jobs or employer – SHP_I and SHP_II

	top management	liberal professions	other self-employed	academic professions and senior management	intermediate professions	qualified non-manual professions	qualified manual professions	unqualified non-manual and manual workers
top management	83.7	1.6	0.1	0.2	0.1	0.1	0.0	0.1
liberal professions	1.8	85.4	0.2	1.4	0.0	0.0	0.0	0.0
other self-employed	1.2	1.4	83.6	1.1	2.2	1.9	3.2	3.0
academic professions and senior management	5.4	11.1	1.3	83.1	5.5	1.6	1.3	1.0
intermediate professions	4.8	0.5	5.9	10.9	82.4	9.8	9.8	4.7
qualified non-manual professions	1.8	0.0	4.5	2.4	6.4	85.8	2.8	3.8
qualified manual professions	0.0	0.0	1.7	0.5	1.9	0.6	82.8	2.0
unqualified non-manual and manual workers	1.2	0.0	2.7	0.3	1.4	0.2	0.1	85.5
total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	166	370	2554	2933	5741	4804	1358	1927

Cramer's V: 0.82, p.<.001, data not weighted

The longitudinal consistency of the other variables of social position is also sometimes better, but to a lesser extent because they are constructed differently; so, for Wright's typology (WR3MAJ$$), the link between waves (Cramer's V) shifts from .61 to .69 (p.<.001), for Goldthorpe's (GLDMAJ$$) from .71 to .75, whereas the correlations do not change (Pearson's r .93 and .96 respectively) for the Treiman (TR1MAJ$$) and CAMSIS (CAIMAJ$$) scales.

4. Hierarchical position of employees

The hierarchical position of employees (P$$W34 or P$$W34A depending on the years for the current job) is also used for constructing variables of social stratification; this is the second variable to give rise to problems, for which we have not yet found a suitable solution, and which certainly explains the excessively high rate of change in the variables of social stratification for those individuals who have not changed job or employer.

Transversely, we can see that the distribution is fairly stable from one year to the next, as the data have not been weighted; in this respect there is no obvious problem.

Distribution of the hierarchical level of employees – W1 to W8 – SHP_I and SHP_II

	W1	W2	W3	W4	W5	W6	W7	W8
1.00 management	7.1	6.8	7.2	7.0	6.2	8.0	8.0	7.0
2.00 training	26.4	26.2	27.2	25.7	28.0	23.9	22.8	23.6
3.00 other	66.5	67.0	65.6	67.3	65.8	68.0	69.2	69.3
total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	4334	3476	3196	2899	2796	4758	3825	3291

Data not weighted

However, if we examine the transitions, combined from W1 to W8 in the following table, for individuals that have not changed jobs or employer we can see that there are too many changes. The link between the successive hierarchical levels is much lower than what we would expect (Cramer's V of 0.58, p.<.001). As for the detail, it shows highly implausible transitions too; i.e. only 62% of the managers would remain at the same level in the following wave, and 25% of supervisors/executives would lose that status one year later.

Combined transitions of hierarchical levels for employees – W1 to W8 – individuals who have not changed jobs or employer – SHP_I and SHP_II

level in current wave	hierarchical level in previous wave		
	management	supervision	other
management	61.8	7.8	1.5
supervision	27.8	67.0	11.4
other	10.4	25.2	87.1
total	100.0	100.0	100.0
n	1159	4208	9786

Cramer's V 0.58, p.<.001, data not weighted

We have not yet corrected this information, but it is clearly not of sufficient quality. From wave 9, the interviewers were briefed better on this specific point and additional instructions were added on the screen. However, the information from the previous wave is not reinserted, as is the case for the type of job.