

Thomann, E. (2014). Is output performance all about the resources? A fuzzy-set Qualitative Comparative Analysis of street-level bureaucrats in Switzerland. *Public Administration*.

Online supplementary data

TABLE A *Raw data matrix*

Canton	Performance	Number of farms to be controlled in 2010	Resources	SM inspections	SM documentation	CM written agreements	CM biannual visits	PC frequency	PC content	CC
A	4.81	434.2	1	1	2	2	2	2	3	3
B	6.45	181.4	2	3	2	4	4	1	2	2
C	8.91	86.4	1	1	1	1	2	1	1	1
D	7.21	30.5	2	2	2	2	3	1	2	1
E	3.26	386.5	4	4	3	4	1	3	4	1
F	1.59	44.1	2	1	2	2	1	1	1	2
G	8.38	52.5	3	2	3	3	4	3	3	2
H	4.9	312	2	1	2	2	2	2	2	2
I	7.13	131.9	4	4	3	1	4	3	1	3
J	8.69	605.3	3	2	2	2	2	2	2	2
K	10.38	89.6	1	2	1	4	4	2	1	2
L	5.43	546.8	1	3	3	1	2	1	2	2
M	5.09	51.1	2	1	3	2	3	2	1	2
N	6.33	140.5	1	2	1	2	3	1	2	1
O	1.6	444.5	4	3	2	2	3	3	1	2
P	9.05	412.2	1	2	2	2	2	2	2	3
Q	3.55	414.2	3	3	2	2	3	3	2	1
R	6.13	257.8	2	3	3	1	4	1	3	4
S	9.9	323.6	2	2	2	2	1	2	2	1

TABLE B *Fuzzy set scores*

Canton	PERF	PRES	RES	SM	CM	PC	CC	GAP
A	0,33	0,94	0,95	0,14	0,35	0,61	0,73	0,05
B	0,67	0,17	0,73	0,61	0,95	0,14	0,27	0,17
C	0,97	0,04	0,95	0,05	0,14	0,05	0,05	0,04
D	0,83	0,01	0,73	0,35	0,61	0,14	0,05	0,01
E	0,15	0,87	0,05	0,89	0,61	0,89	0,05	0,87
F	0,05	0,02	0,73	0,14	0,14	0,05	0,27	0,02
G	0,95	0,02	0,27	0,61	0,89	0,78	0,27	0,02
H	0,35	0,65	0,73	0,14	0,35	0,35	0,27	0,27
I	0,81	0,08	0,05	0,89	0,61	0,35	0,73	0,08
J	0,96	1,0	0,27	0,35	0,35	0,35	0,27	0,73
K	0,99	0,04	0,95	0,14	0,95	0,14	0,27	0,04
L	0,44	0,99	0,95	0,78	0,14	0,14	0,27	0,05
M	0,38	0,02	0,73	0,35	0,61	0,14	0,27	0,02
N	0,64	0,09	0,95	0,14	0,61	0,14	0,05	0,05
O	0,05	0,95	0,05	0,61	0,61	0,35	0,27	0,95
P	0,97	0,91	0,95	0,35	0,35	0,35	0,73	0,05
Q	0,17	0,92	0,27	0,61	0,61	0,61	0,05	0,73
R	0,59	0,43	0,73	0,78	0,61	0,35	0,95	0,27
S	0,99	0,7	0,73	0,35	0,14	0,35	0,05	0,27

TABLE C *Necessary conditions for performance*

Condition	Appropriate performance (PERF)		Deficient performance (perf)	
	Consistency	Coverage	Consistency	Coverage
PRES	0.442	0.562	0.706	0.615
pres	0.698	0.777	0.498	0.378
RES	0.763	0.732	0.660	0.432
res	0.408	0.637	0.591	0.630
GAP	0.222	0.535	0.474	0.780
gap	0.908*	0.716	0.717	0.386
SM	0.517	0.705	0.623	0.580
sm	0.692	0.729	0.683	0.491
CM	0.666	0.781	0.654	0.524
cm	0.594	0.716	0.727	0.598
PC	0.400	0.719	0.548	0.673
pc	0.818	0.726	0.771	0.467
CC	0.413	0.795	0.422	0.553
cc	0.768	0.661	0.844	0.495

GAP = PRES*res. Consistency threshold ≥ 0.9 (Schneider and Wagemann 2012, pp. 144ff).

* Case J contradicts the statement of necessity; only 4 cases do not have membership in the condition (trivial necessary condition).

TABLE D *Truth table: Analysis of sufficiency for appropriate performance (PERF)*

PRES	RES	SM	CM	PC	CC	PERF	Number	Consistency
0	0	1	1	1	0	1	1	1.000
1	1	0	0	0	0	1	1	0.976
0	1	1	1	0	0	1	1	0.966
0	0	1	1	0	1	1	1	0.962
0	1	1	1	0	1	1	1	0.961
0	1	0	1	0	0	1	4	0.926
1	1	0	0	1	1	0	1	0.881
1	1	0	0	0	0	0	2	0.870
1	1	1	0	0	0	0	1	0.853
0	1	0	0	0	0	0	2	0.830
1	0	0	0	0	0	0	1	0.785
1	0	1	1	0	0	0	1	0.673
1	0	1	1	1	0	0	2	0.574

Technically, sufficient performance was assessed prior to deficient performance (the sequence does not alter the results).

Raw consistency threshold: 0.926.

Directional expectations: RES → PERF, sm → PERF, cm → PERF, pc → PERF.

Complex solution: pres*RES*CM*pc*cc + pres*SM*CM*pc*CC + pres*res*SM*CM*PC*cc + PRES*RES*sm*cm*pc*CC → PERF (solution consistency 0.942, solution coverage 0.637).

Parsimonious solution: pres*CM + pc*CC → PERF (solution consistency 0.891, solution coverage 0.691).

TABLE E *Truth table: Analysis of sufficiency for deficient performance (perf)*

PRES	RES	SM	CM	PC	CC	perf	Number	Consistency	
1	0	1	1	1	1	0	1	2	0.822
1	0	1	1	1	0	0	1	1	0.790
0	1	1	1	1	0	1	0	1	0.748
1	1	0	0	0	1	1	1	1	0.733
0	0	1	1	1	0	1	0	1	0.707
1	0	0	0	0	0	0	0	1	0.643
0	1	1	1	1	0	0	0	1	0.643
1	1	0	0	0	0	1	0	1	0.630
1	1	0	0	0	0	0	0	2	0.627
0	1	0	0	0	0	0	0	2	0.623
1	1	1	0	0	0	0	0	1	0.616
0	0	1	1	1	1	0	0	1	0.613
0	1	0	1	1	0	0	0	4	0.557

Raw consistency threshold: 0.733, exclusion of contradictory truth table row 3.

Contradictory assumptions: $\text{pres} * \text{CM} + \text{pc} * \text{CC} \rightarrow \text{perf}$.

Prime implicant = $\text{PRES} * \text{res} * \text{SM} * \text{cc}$. The data display tied logically redundant prime implicants (Schneider and Wagemann 2012, pp. 108ff). The prime implicant chosen for the solution formula is the one displaying a public service gap, which is of theoretical interest here. The alternative parsimonious and intermediate solutions are available upon request.

Directional expectations: $\text{res} \rightarrow \text{perf}$, $\text{SM} \rightarrow \text{perf}$, $\text{CM} \rightarrow \text{perf}$, $\text{PC} \rightarrow \text{perf}$.

Complex solution:

$\text{PRES} * \text{res} * \text{SM} * \text{CM} * \text{cc} + \text{PRES} * \text{RES} * \text{sm} * \text{cm} * \text{PC} * \text{CC} \rightarrow \text{perf}$ (solution consistency 0.816, solution coverage 0.461).

Parsimonious solution (contradictory assumptions excluded from minimization under ESA):

$\text{cm} * \text{PC} + \text{PRES} * \text{PC} + \text{PRES} * \text{CM} * \text{cc} + \text{PRES} * \text{res} * \text{SM} * \text{cc} \rightarrow \text{perf}$ (solution consistency 0.780, solution coverage 0.586).