



Qualitative Comparative Analysis (QCA) with R

Workshop, 3rd term 2016-2017

3 & 8 May 2017

Wednesday 3.5.17 → Seminar Room 4

Monday 8.5.2017 → Seminar Room 2

Instructors: **Eva Thomann**, Institute of Political Science, Heidelberg University
Nena (Ioana-Elena) Oana, Doctoral School of Political Science, Public Policy and International Relations, Central European University

Please register [online](#) (please note that registrations will be open **until 27.04.2017**)

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Course outline

Qualitative Comparative Analysis (QCA) (Ragin 1987) is a configurational, set-theoretic method, suitable for the comparison of intermediate ($N \geq \text{app. } 10$) to large numbers of cases. The method identifies necessary and sufficient conditions for an outcome (as opposed to correlations). Instead of assuming discrete effects of single variables, QCA foresees the causal role of a single condition unfolding in combination with other conditions (conjunctural causation); the occurrence of an outcome can have a different explanation than its non-occurrence (asymmetric causality); and QCA allows for different, mutually non-exclusive explanations of the same phenomenon (equifinality).

This free introductory workshop is addressed to researchers who are interested in a methodological tool that enables them to deal with such complex causal patterns. The aim of the workshop is to enable the participants to independently carry out a crisp set (dichotomous data) or fuzzy set (ordinal or continuous data) QCA and to understand the basic epistemological and analytical foundations of set-theoretic methods. We will primarily discuss QCA as a case-oriented approach to small- and intermediate N comparisons. The intensive two-day course has a practical focus and combines theoretical blocks with hands-on exercises. We will use real-life data to replicate a published study using the R packages QCA and SetMethods. The last afternoon covers advanced innovative tools for performing QCA on clustered data, formal set-theoretic theory evaluation, and set-theoretic multi-method research.

Ragin, C.C. (1987). *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies*. Berkeley and Los Angeles: University of California Press. Requirements

No prior knowledge is required. Note however that the course is very intensive and mainly focuses on technical aspects of QCA. It will help the participants to bring along a basic understanding of case-oriented

research approaches, of concept measurement, and of qualitative comparative research design. We will introduce you to and work with R, a software that is based on programming language.

Credits

This workshop is worth **10 credits**. In order to be awarded the credits, registered participants will need to fully attend the course, and read the mandatory literature.

Schedule

<i>Day 1: Introduction to the basics</i>	
9-13h	<p>Instructor: Eva Thomann</p> <p>What is QCA (not)?</p> <ul style="list-style-type: none"> - Origins and dissemination of QCA - Breadth vs. depth and the Comparative Method - Causal complexity - Variants and uses of QCA - Notions of necessity and sufficiency, compared to correlation <p>Getting the basics:</p> <ul style="list-style-type: none"> - Sets, set membership and calibration - Basic set operations and structuring concepts - Rules for combining logical operators - Calculating membership in sets
14-15.30h	<p>Instructor: Nena Oana</p> <p>Lab session 1 (90')</p> <ul style="list-style-type: none"> - Introduction to the software and sample data (45') - Calibration of sets - Basic Boolean operations <p>Based on Thomann & Wittwer (2017), chapters 2, 3.1, 4.1 and 4.3</p>
15.45-18h	<p>Instructor: Eva Thomann</p> <p>Understanding the technique:</p> <ul style="list-style-type: none"> - Set relations with crisp and fuzzy sets - Consistency and coverage measures and their calculation
<i>Day 2: Let's do QCA</i>	
9—13h	<p>Instructor: Eva Thomann</p> <p>Steps of a QCA analysis:</p> <ul style="list-style-type: none"> - Analysis of necessity - Analysis of sufficiency - Truth table analysis and logical minimization - QCA results and causal complexity <p>Exercise: crisp-set QCA</p> <p>Limited diversity</p>

	<ul style="list-style-type: none"> - Limited diversity, logical remainders and counterfactual arguments - Complex, intermediate and parsimonious solution - Standard analysis (SA) and Enhanced Standard Analysis (ESA)
14-15.30h	<p>Instructor: Nena Oana</p> <p>Lab session 2 (90')</p> <ul style="list-style-type: none"> - XY-plots - Analysis of necessity and sufficiency (fsQCA, Standard Analysis) <p>Based on Thomann & Witter (2017), chapters 5, 6, 7.2 and 7.3</p>
15.45-18h	<p>Instructor: Nena Oana</p> <p>Advanced tools:</p> <ul style="list-style-type: none"> - QCA with clustered data - Formal set-theoretic theory evaluation - Set-theoretic multi-method research <p>This session will be a “continuous lab”.</p> <p>Based on Thomann & Wittwer (2017), chapters 8.2, 8.3, 8.4</p>

Instructor bios

Eva Thomann is a postdoctoral researcher currently holding visiting fellowships at the Department of Political and Social Sciences, European University Institute, Florence and the Institute of Political Science at Heidelberg University. She specializes in Public Policy, Public Administration and the innovative use of qualitative comparative and set-theoretic methods. Eva Thomann has published QCA studies in leading journals including, amongst others, the European Journal of Political Research and the Journal of European Public Policy. Since 2013 she regularly teaches QCA in PhD seminars in different formats and at method schools. Her substantive research focuses on policy implementation. Her user-friendly manual for performing QCA with R is available on the personal website: <http://www.evathomann.com/links/qca-r-manual>.

Nena Oana is a PhD Researcher in Comparative Politics at the Central European University in Budapest where she is currently working on responsiveness to different forms of political participation. She is the main developer of the R package SetMethods used for Set-Theoretic Multi-Method Research and Advanced QCA. Nena has extensive experience in teaching applied QCA using R programming language, having assisted for the ECPR Summer and Winter School QCA courses for the past 5 years. Besides research methodology, her main research interests also include political participation and representation, the quality of democracy, and political psychology.

Required preparation

Software

Participants should bring along their own laptops. Sockets will be provided. We will use the following freeware, which the participants should download individually **before** the course starts:

- R (freely available at <http://cran.rstudio.com/>).
- RStudio (freely available at <http://www.rstudio.com/products/rstudio/download/>.)

The R software is the best, most powerful and flexible program available for QCA. We will provide an easy-going and beginner-friendly introduction to R.

Getting started with R: Download R before downloading RStudio.

Open R and simply copy-paste the following command into the console:

```
install.packages(c("arm", "car", "gmodels", "Hmisc", "MASS", "memisc", "polycor", "psych", "reshape", "VIM", "lattice", "XML", "xtable", "foreign", "directlabels", "betareg", "plyr", "dplyr", "QCA", "SetMethods"), dependencies = TRUE)
```

Within the console just hit Enter to execute the command. Probably a window will pop up, where you need to choose a server to download the packages. If R asks you to specify a CRAN mirror, just choose your country. This will load the QCA package and the SetMethods package required to perform QCA, as well as some additional auxiliary packages. If you have insurmountable difficulties in downloading the software and installing the packages, please contact nenaoana@yahoo.com.

The latest information on QCA software, trainings, publications, events, and an exhaustive bibliography of recent QCA articles (methodological and applied) is always available at <http://www.compass.org/>

Literature and data

To benefit from the course in a meaningful way it is essential to read **all** the required texts in advance. All readings and further course material including sample data will be made available to the registered participants in advance in [this dropbox folder](#).

Required readings (ordered with regard to content)

Hinterleitner, M., Sager, F. and E. Thomann (2016). The Politics of External Approval: Explaining the IMF's Evaluation of Austerity Programs. *European Journal of Political Research* 55(3): 549–567. **Sample study for course, read beforehand to be able to follow class.**

Day 1:

Berg-Schlosser, D., De Meur, G., Rihoux, B. and C. C. Ragin (2009). “Qualitative Comparative Analysis (QCA) as an Approach”. In Rihoux, B. and C.C. Ragin. *Configurational Comparative Methods. Qualitative Comparative Analysis (QCA) and Related Techniques*. Los Angeles, London, New Delhi and Singapore: Sage Publications, 1-18.

Ragin, C.C. (2009). “Qualitative Comparative Analysis Using Fuzzy Sets (fsQCA)”. In Rihoux, B. and C. C. Ragin. *Configurational Comparative Methods. Qualitative Comparative Analysis (QCA) and Related Techniques*. Los Angeles, London, New Delhi and Singapore: Sage Publications, 87-121.

Schneider, C. Q. and C. Wagemann (2010). “Standards of Good Practice in Qualitative Comparative Analysis (QCA) and Fuzzy Sets”, *Comparative Sociology* 9(3): 397-418.

Day 2:

Schneider, C. Q. and I. Rohlfig (2013). "Combining QCA and process tracing in set-theoretic multi-method research", *Sociological Methods & Research* 42(4): 559-597.

Schneider, C. Q. and C. Wagemann (2012). „The evaluation of theories in set-theoretic methods“. *Set-Theoretic Methods for the Social Sciences. A Guide to Qualitative Comparative Analysis*. New York: Cambridge University Press, 295-304.

Garcia-Castro, R. and M.A. Ariño. (2016).” A General Approach to Panel Data Set-Theoretic Research", *Journal of Advances in Management Sciences & Information Systems* 2: 63-76.

Optional readings

Textbook (optional, recommended)

Schneider, C.Q. and C. Wagemann (2012). *Set-Theoretic Methods for the Social Sciences. A Guide to Qualitative Comparative Analysis*. New York: Cambridge University Press.

R manual (optional, recommended)

Thomann, E. and S. Wittwer (2017). *Performing fuzzy- and crisp set QCA with R: A user-oriented beginner's guide*. URL: <http://www.evathomann.com/links/qca-r-manual>.

Empirical example studies (optional)

Bara, C. (2014). "Incentives and opportunities A complexity-oriented explanation of violent ethnic conflict", *Journal of Peace Research* 51(6): 696-710.

Basedau, M., and T. Richter (2014). "Why do some Oil Exporters Experience Civil War but others do not? Investigating the Conditional Effects of Oil", *European Political Science Review* 6 (4): 549-74.

Botta, M., and G. Schwellnus (2015). "Enforcing state aid rules in EU candidate countries: a qualitative comparative analysis of the direct and indirect effects of conditionality", *Journal of European Public Policy* 22(3): 335-352.

Ide, T. (2015). "Why do conflicts over scarce renewable resources turn violent? A qualitative comparative analysis", *Global Environmental Change* 33: 61-70.

Misangyi, V.F., and A.G. Acharya (2014). "Substitutes or complements? A configurational examination of corporate governance mechanisms", *Academy of Management Journal* 57(6): 1681-1705.

Sutton, A.M., and M.A. Rudd (2015). "The effect of leadership and other contextual conditions on the ecological and socio-economic success of small-scale fisheries in Southeast Asia", *Ocean & Coastal Management* 114: 102-115.

Thomann, E. (2015). “Customizing Europe: Transposition as bottom-up implementation”, *Journal of European Public Policy* 22(10): 1368-1387.

Sager, F. and E. Thomann (2016). “Multiple streams in member state implementation: politics, problem construction and policy paths in Swiss asylum policy”, *Journal of Public Policy*, DOI:10.1017/S0143814X1600009X.

Further readings (optional)

Basurto, X. and J. Speer (2012). "Structuring the calibration of qualitative data as sets for qualitative comparative analysis (QCA)", *Field Methods* 24(2): 155-174.

Baumgartner, M. (2015). "Parsimony and Causality", *Quality & Quantity* 49: 839-856.

Baumgartner, M. and A. Thiem (2015). "Model Ambiguities in Configurational Comparative Research". *Sociological Methods & Research*, DOI: 10.1177/0049124115610351.

Caren, N. and A. Panofsky (2005). "TQCA. A Technique for Adding Temporality to Qualitative Comparative Analysis", *Sociological Methods & Research* 34(2): 147-172.

Cooper, B. and J. Glaesser (2015). "Analysing Necessity and Sufficiency with Qualitative Comparative Analysis: How do Results Vary as Case Weights Change?", *Quality & Quantity*. DOI:10.1007/s11135-014-0151-3. Cronqvist, L. and D. Berg-Schlusser (2009). "Multi-Value QCA (MVQCA)". In Rihoux, B. and C. C. Ragin. *Configurational Comparative Methods. Qualitative Comparative Analysis (QCA) and Related Techniques*. Los Angeles, London, New Delhi and Singapore: Sage Publications, chapter 4.

Duša, A. (2007). "User Manual for the QCA(GUI) Package in R", *Journal of Business Research* 60(5):576-86.

Emmenegger, P., D. Schraff and A. Walter (2014). "QCA, the Truth Table Analysis and Large-N Survey Data: The Benefits of Calibration and the Importance of Robustness Tests", *COMPASS Working Paper* 2014-79.

Fiss, P. C. (2011). "Building better causal theories: A fuzzy set approach to typologies in organization research", *Academy of Management Journal* 54(2): 393-420.

Gerrits, L. M., and S. Verweij (2013). "Critical Realism as a Meta-Framework for Understanding the Relationships between Complexity and Qualitative Comparative Analysis", *Journal of Critical Realism* 12(2): 166-82.

Goertz, G. (2006). "Concept Intension and Extension". *Social Science Concepts. A User's Guide*. Princeton: Princeton University Press, 69-94.

Goertz, G. and J. Mahoney (2005). "Two-level Theories and Fuzzy-Set Analysis". *Sociological Methods & Research* 33(4): 497-538.

Greckhamer, T., V. F. Misangyi, and P. C. Fiss (2013). "The two QCAs: From a small-N to a large-N set theoretic approach." *Research in the Sociology of Organizations* 38: 49-75.

Grofman, B., and C. Q. Schneider (2009). "An introduction to crisp set QCA, with a comparison to binary logistic regression", *Political Research Quarterly* 62(4): 662-672.

Haesebrouck, T. (2015). "Pitfalls in QCA's Consistency Measure", *Journal of Comparative Politics* 2:65-80.

Hino, A. (2009). "Time-Series QCA", *Sociological Theory and Methods* 24 (2): 247-265.

Kvist, J. (2007). "Fuzzy set ideal type analysis." *Journal of Business Research* 60(5): 474-481.

Maggetti, M., and D. Levi-Faur (2013). "Dealing with Errors in QCA." *Political Research Quarterly* 66(1): 198-204.

Mahoney, J., and G. Goertz (2006). "A tale of two cultures: Contrasting quantitative and qualitative research", *Political Analysis* 14(3): 227-249.

Mahoney, J. Kimball, E. and K.L. Koivu (2009). "The logic of historical explanation in the social sciences", *Comparative Political Studies* 42(1): 114-146.

Mahoney, J. and R. Sweet Vanderpoel (2015). "Set Diagrams and Qualitative Research", *Comparative Political Studies* 48(1): 65-100.

Marx, A. and A. Dusa (2011). "Crisp-Set Qualitative Comparative Analysis (csQCA): Contradictions and consistency benchmarks for model specification", *Methodological Innovations Online* 6.2: 103-148.

Ragin, C. C. (2006). "Set Relations in Social Research: Evaluating Their Consistency and Coverage", *Political Analysis* 14(3): 291-310.

Ragin, C. C. (2008a). „Measurement versus calibration: a set-theoretic approach“. In Box-Steffensmeier, J. M., Brady, H.E. and D. Collier. *The Oxford Handbook of Political Methodology*. Oxford Handbooks Online: 174-198.

Ragin, Charles C. (2008b). "Easy Versus Difficult Counterfactuals". *Redesigning Social Inquiry: Set Relations in Social Research*. Chicago: University of Chicago Press, chapter 9.

Rihoux, B., Alamos, P., Bol, D., Marx, A. and I. Rezsóhazy (2013). "From niche to mainstream method? A comprehensive mapping of QCA applications in journal articles from 1984 to 2011", *Political Research Quarterly* 66(1): 175-184.

Rihoux, B. and G. De Meur (2009). "Crisp-Set Qualitative Comparative Analysis (csQCA)". In Rihoux, B. and C. C. Ragin. *Configurational Comparative Methods. Qualitative Comparative Analysis (QCA) and Related Techniques*. Los Angeles, London, New Delhi and Singapore: Sage Publications, 33-68.

Rohlfing, I. and C.Q. Schneider (2014). „Clarifying Misunderstandings, Moving Forward: Towards Standards and Tools for Set-Theoretic Methods“, *Qualitative & Multi-Method Research* 12(2): 27-34.

Schneider, C. Q. and C. Wagemann (2012). "Potential pitfalls in the analysis of necessity and sufficiency and suggestions for avoiding them". *Set-Theoretic Methods for the Social Sciences. A Guide to Qualitative Comparative Analysis*. New York: Cambridge University Press, 220-250.

Schneider, C. Q. and C. Wagemann (2012). "Notions and operations in set theory". *Set-Theoretic Methods for the Social Sciences. A Guide to Qualitative Comparative Analysis*. New York: Cambridge University Press, 42-56.

Schneider, C. Q. and C. Wagemann (2013). "Doing Justice to Logical Remainders in QCA: Moving Beyond the Standard Analysis", *Political Research Quarterly* 66(1): 211-220.

Skaaning, S. (2011). "Assessing the robustness of crisp-set and fuzzy-set QCA results", *Sociological Methods & Research* 40(2): 391-408.

Thiem, A., Baumgartner, M. and D. Bol (2015). "Still Lost in Translation! A Correction of Three Misunderstandings between Configurational Comparativists and Regressional Analysts", *Comparative Political Studies*, Advance online publication, DOI: 10.1177/0010414014565892.

Thomann, E. and M. Maggetti (2017). *Designing research with Qualitative Comparative Analysis (QCA): Approaches, challenges, and tools*. Paper presented at the 2017 ECPR Joint Sessions, Nottingham, 25.-30.4.2017.

Wagemann, C., Buche, J., and M.B. Siewert (2015). "QCA and Business Research: Work in Progress or a Consolidated Agenda?", *Journal of Business Research*. DOI:10.1016/j.jbusres.2015.10.010.

Wagemann, C. and C. Q. Schneider (2015). "Transparency Standards in Qualitative Comparative Analysis." *Qualitative and Multi-Method Research: Newsletter of the American Political Science Association's QMMR Section* 13(1): 38-42.