CONDITIONS FOR TERRITORIAL AUTONOMIES IN THE LIGHT OF QCA TECHNIQUES (csQCA, mvQCA and fsQCA)

Maria Ackrén
PhD Student in Political Science
Åbo Akademi University

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Maria Ackrén
Department of Political Science
Åbo Akademi University
Tavastgatan 13, 20500 Åbo
FINLAND

Phone: +358-2-215 4319 (Office)
Fax: +358-2-215 4585 (Office)
E-mail: maria.ackren@abo.fi

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Abstract

This article considers three various tools within the family of Qualitative Comparative Analysis (QCA). The techniques discussed are Crisp-Set QCA (or Boolean algebra), Multi-Value QCA and Fuzzy-Set QCA. All the tools will be highlighted and exemplified with empirical data derived from a forthcoming work about the degree and kind of territorial autonomies in the world.[2]

The idea is to show what happens when we use the different techniques for the same data set. This will show the usefulness and shortcomings, when combining various tools. The techniques are chosen, since they are all related to each other and therefore the similarities and differences between the three techniques are easier to grasp and the data set will not suffer, while we can obtain the same research question throughout the analyses. The assessment of QCA techniques gives us necessary and sufficient conditions according to set theoretical principles. Results show that csQCA and mvQCA give us uncertain results with a lot of contradictions between the cases, while fsQCA is more straightforward. FsQCA also gives us solution terms for the whole data set, which csQCA and mvQCA are lacking.

Keywords: Crisp-Set QCA (or Boolean algebra), Multi-Value QCA, Fuzzy-Set QCA and Mixed Methods.

Introduction

Mixed method approaches in the research have been current topics in recent years and are still topical issues in research concerning methodology issues. The debate is ongoing, whether to use mixed method approaches or not. Some researchers argue that much can be benefited from a mixed method approach, while others are more skeptical. The discussion have been brought out on a more general and theoretical level[3] with few empirical evidences.

In this article empirical evidences will come into play, while using various techniques for the same data set. What happens if we use the same data employing different approaches? The study will show the usefulness of combining different approaches, and at the same time describe the possibilities and limitations within each type of analysis. The research question will be the same throughout the analysis.

The techniques' advantages and drawbacks will also be scrutinized. The aim with the investigation is to show how and when each technique should be considered and in which circumstances it might be appropriate to think about which approach to use.

The comparative methods are said to be not directly experimental, they are not case studies and they do not handle ideal data (Teune, 1975:195). That the method is not directly experimental means that we do not have a laboratory at hand, where we test our data. Some quasi-experimental techniques are though available in the form of the QCA techniques. The comparative method deals with several cases and not just one single case and ideal data is difficult to achieve, when there could be defective

sampling, a small number of cases and even observational problems. The prescription to come up with generalizations is to place case studies in a more general context and adapt observational problems in different social contexts. Other things to have in mind are to reduce the number of variables and choose which systems that are going to be under investigation (Teune, 1975:196).

This article considers only the Qualitative Comparative Analysis strategies of csQCA, mvQCA and fsQCA. The emphasis is to compare these nearly related techniques and outline the similarities and differences between the various techniques at hand. The focus will be on fuzzy-set (fsQCA), while it is considered to be a developed version of the other two. The argument is that fuzzy-set might be a better and even a more superior tool than csQCA and mvQCA altogether. All strategies will be highlighted and exemplified through data drawn from a forthcoming work about territorial autonomies in the world (Ackrén, forthcoming 2009, see also Ackrén, 2005). This is to illustrate how the techniques operate in practice.

The study will be divided into five parts. The first section will reveal the data set and what kind of information it includes. All variables and how they are operationalized will be clarified in this section. The second part will begin with the csQCA analysis, followed by the third part including the mvQCA analysis and the fourth section will take the fsQCA analysis into account. The logic behind the order is to show the reader what happens, when we move from a more easy tangible technique into a more complex one. The last part will summarize the results obtained from all three strategies.

Presentation of the Data

The population under investigation will be first presented and outlined. The operationalization of the dependent variable will also be scrutinized. The independent or possible explanatory factors will follow in the same manner as the dependent variable.

The territorial autonomies have been drawn from the constitutions of the world and other relevant sources. A territorial autonomy is defined as *a geographically defined area which differs from other sub-regions in a specific country and has received special status with regulatory powers* in this context. The mapping consists of 65 various territorial autonomies in the world, which are distributed among 25 countries. Most regions are islands, a total of 44, and the rest of 21 territories are land-locked areas. The degree of autonomy is established through indicator scores illustrating the variation between the cases. The indicator score is composed by five various characteristics related to the commonalities between territorial autonomies. These include distribution of power, functions, constitutional base, control over the amendments and tax abilities.

The distribution of power is divided into if the region possesses legislative or regulatory powers. If a region has legislative powers it receives the value 1, otherwise the value 0 is used. Functions are categorized as internal functions, internal combined with shared functions and internal functions combined with external functions. The combination of internal and external functions is indicated with the value 1, the combination of internal and shared functions has the value 0.5 and internal functions

only receive the value 0. The constitutional basis is divided into if the region is both mentioned in the constitution of the state and has its own constitution/statute/act and this leads to the value of 1. If the region only has its own constitution/statute/act it receives the value 0.5 and if the region is only mentioned in the state's constitution it has the value of 0. The control over amendments is characterized by the region's own possibility to amend its own constitution according to the value 1. If there should be a consensus reached between the national parliament and the regional level the territorial autonomy receives the value of 0.5 and if it is only the national level that decides the destiny then the region scores 0. Tax abilities are divided into if the region possesses important tax abilities or not. Those regions that have important tax abilities are favored with the value 1 otherwise the region receives the value 0.[4] The maximum score a region can reach is five according to the indicator score of autonomy. The different added scores are shown in appendix 1 and illustrate the degree of autonomy or the dependent variable in this context.

The selection of the "negative cases", the so called non-autonomous regions have been done according to the Possibility Principle (Mahoney and Goertz, 2004: 653-669). This principle states that we should select cases, where the outcome of territorial autonomy is possible. The possible cases should be both island and land-locked regions at the highest sub-national level within states, but which have not yet reached a special status. The proportion between island regions and land-locked regions should follow the same pattern as for the territorial autonomies. This means that the majority of possible cases will be island regions and a smaller portion will consist of land-locked areas. An aspect to have in mind is that these regions should not meet the definition of territorial autonomy and they should all score 0 at degree of autonomy.

A control group of 15 regions have been chosen of which ten are island regions and five are land-locked areas. The regions should possess some of the same characteristics as the territorial autonomies, when it comes to the potential explanatory factors.

The independent variables or the potential explanatory factors are all derived from the literature about autonomy and especially literature dealing with territorial autonomy (i.e., for example, Hannum, 1996; Ghai, 2000; Safran and Máiz; 2000; Gál, 2002; Weller and Wolff, 2005). One potential explanatory factor is the regime choice of the state, whether the state is a democracy or an authoritarian state or something in between. This could have an impact of how well countries deal with territorial autonomies and how promising these regions develop into their special status. It is argued throughout the literature that autonomy emerges only in democratic environments (Ghai, 2000; Safran and Máiz, 2000). As Ghai, for instance, argues it is evident that if we compare all autonomy arrangements existing in liberal societies, communist states and developing countries, most successful examples are found in liberal democracies (Ghai, 2000: 16).

The democracy status will be derived from the Freedom House Index in this context (<http://www.freedomhouse.org/>). The ratings used are the most previous ones according to the countries, where the territorial autonomies lie or where the non-autonomous regions lie. The ratings used are both the political rights (PR) and civil liberties (CL). Some ratings are separate ratings for the territorial autonomies in question, where such ratings are available. The sum of PR and CL will be used. All information is found in appendix 1.

The regional specific factors are conditions, which are directly related to the regions in question. One such factor is the historical strategic importance of the region. Many of the territorial autonomies have been military strategic outposts during the World Wars or functioning as colonies for their metropolitan states or even been victims of wars or conflict situations (Aldrich and Connell, 1998). The operationalization of historical strategic importance is divided into if the region has been a strategic military outpost or not, if the region has been a colonial territory for a considerable long time or if the region has been developing into an autonomy due to war or conflict resolution. Some regions have a combination of being a strategic military outpost and colony at the same time or other possible combinations might also be at hand.

Another regional specific factor is the geographical distance. Geographical distance is often seen as center-periphery divisions in the research. The convergence of institutional relations between center and periphery is generally leading to decentralization or regionalization (Balme et.al., 1994). The fact that regions are cut off from the rest of the country as a whole could reflect that they develop their own culture and view themselves as an aspect affecting viability (Sorens, 2005). Geographical distance is considered to be one of the main factors for successful territorial autonomy regimes to occur (Safran, 2000). The geographical distance will here be measured according to the distance to the metropolitan capital. It is believed that the distance between the region's capital and the capital of the metropolitan state has a major impact on which kind of degree of autonomy that has been implemented in the peripheral region in question. A longer distance from the metropolitan power

should lead to a higher degree of autonomy, since it is believed that a longer distance gives the region possibilities to rule by its own in a more freely manner.

A final regional specific factor is the existence of regional movements, parties and/or separatist groups giving more voices for autonomy or even secession. Some countries try to establish a special relationship between the region's government and its people through various political tools. An example being, drawing constituencies in such a fashion that it does not serve the focus for minority claims (McGarry, 2005). The movements can be seen as powerful expressions of group identity and a desire for a more equitable distribution of political economic resources (Jalali and Lipset, 1992-93). Secessionist parties usually favor independence (Sorens, 2004: 728), while regional parties on the other hand are primarily organized to defend regional interests and traditions with a focus on closer integration with the center (Sorens, 2005: 315). Governments offer autonomy to a region to reduce the appeal of secessionist claims (Sorens, 2004: 740-741). The operationalization of the variable follows the simplistic logic if the region possesses regional movements/parties, separatist movements/groups or national parties or not. Some regions might have various combinations of the three indicators available.

One interrelated factor should also be included. The interrelated factor is a condition that relates to the state level. Ethnic distinctiveness is considered to be one of the most important factors, when it comes to autonomy. Ethnically divided societies, when ethnic communities are geographically located, tend to have decentralized state systems (Fabbrini, 2000: 179). Many authors believe that federalism, decentralization, regionalism and even non-territorial forms of autonomy occur because of ethnic

diversity (Riker, 1996; Agranoff, 1996; Cornell, 2002; Elazar, 1996). Ethnic distinctiveness will be measured according to the primordial characteristics of religion, language and ethnic origin in this case. Ethnic distinctiveness will hereby mean a non-dominant group who share certain ethnic, religious or linguistic characteristics which are different from those of the majority population in a given state. The regions are compared in relation to their respective metropolitan power in this context. The ethnic origin should be different from the mother country in question. If, for instance, a region has an ethnic origin deriving from African roots, but where the population of the mother country is derived from European descents, this will indicate the difference between the mother country and the region in question. Language will be indicated if the region has another official language than the state in question or where there might be various official languages used at the same time. Language also indicates where another majority language is used than in the overall country. Dialects or various accents will not be included. Religion will be indicated if there is a different religion practiced in the region than in the country overall. The major religions in the world are used, but Christianity is divided into Protestantism and Catholicism, since these religions often are in a conflict relation to each other.

After this short inventory, we can say that the investigation consists of 80 entities and five different potential explanatory factors. All the information of the raw data is found in appendix 1. The real content of the study will be the various QCA techniques that follow. The research question to be answered is what conditions that lead to territorial autonomy proper. The QCA techniques give us combinations of conditions for a specific outcome. The logic behind this is to find causal patterns (i.e. necessary

and sufficient causal conditions) behind the variables for the dependent variable. The methods enable the researcher to model complex and diverse constellations of case aspects and to assess set-theoretic relations. The point is to see whether we receive the same combinations of conditions for every single technique or if there might be any diversity between the three techniques under scrutiny. I will start with the Crisp-Set QCA technique.

Crisp-Set QCA

Crisp-Set QCA (csQCA) is derived from Boolean algebra within mathematics. The method is known as the algebra of logic and it is the logical thinking that is in focus, not real algebra. The basic criterion in csQCA is that we only use binary data on a nominal scale. This means that if we have other variables at hand we need to transform them into nominal scale measures. The logic is that we either have something that is true (or present) and false (or absent). The figures 1 and 0 illustrate this. Figure 1 is for the present or true statement and 0 for the absent or false statement (Ragin, 1987: 85-86). CsQCA could also be described according to classes, where 0 is a sign for an empty class and 1 is a non-empty class (Miller, 1982: 63).

The basic tool in csQCA is a truth table. This is constructed to show all possible combinations in the investigation between both dependent and independent variables. Every logic combination is presented as a row in the table. The truth table has as many rows as there are logical possible combinations of explaining variables. This means, for example, that if there are five binary independent variables, then the table

consists of 2^5=32 rows. A row is presented as a possible combination according to present/absent independent variables (Ragin, 1987: 87).

There are three strategies for using csQCA analysis. These are addition, multiplication and reduction or minimization. CsQCA addition is not the same as arithmetic addition. The sign "+" is here used as the fundamental *or*. Multiplication or the sign "·" is used as the fundamental *and*. Variables in a truth table is often labeled according to letters, where uppercase letters indicate the present or true statement. Lowercase letters indicate the absent or false statement. If we have a combination such as A+B=Z and A=1 and B=1, then Z=1. In other words 1+1=1 in this case. The underlying idea is that if any of the additional factors are present, then the outcome is true (Ragin, 1987:89; Schneider & Wagemann, 2007: 44-48). Multiplication is used for combination of conditions that are either necessary or sufficient. Various paths might lead to the same outcome.

The reduction or the minimization strategy is to simplify what would otherwise be seen as complicated. If two Boolean expressions vary in only one aspect and produce the same outcome, then we can reduce the factor that varies, while this variable is seen as irrelevant and in this way we get a more simplified combination. Reduction is used as long as it is possible to minimize. The procedure is to find the least possible combination (Ragin, 1987: 93).

The casual conditions in csQCA are defined as necessary and sufficient conditions. A cause is necessary if it must be available to produce a specific outcome. A cause is sufficient if it by itself produces the outcome in question (Ragin, 1987: 99). A cause is

both necessary and sufficient if it is the only cause that produces the outcome and is in a singular form (not a combination of causal conditions). This means that if A=Y, A is both necessary and sufficient in this case, since it is the only variable that effect the outcome. A casual condition is sufficient but not necessary if it has the capacity to produce the result, but it is not the only casual condition that can do so. A causal condition is necessary but not sufficient if it has the capacity to produce the outcome in combination with other causes and appears in all such combinations (Ragin, 1987: 98).

The advantages and disadvantages of csQCA should also be emphasized. One drawback with this technique is that it depends heavily on theoretical and conceptual developments to define which factors should be included in the analysis. This means that if we do not have proper variables included in the investigation, the result will be invalid (Peters, 1998: 168). This is a problem with every method and not just csQCA. Another drawback is the strict dichotomization of the variables, both dependent and independent ones. Here we get into measurement problems, how to measure what is present and absent and to what degree and so forth. The transformation to nominal scale involves a loss of information that would otherwise be present (Peters, 1998: 169). Other problems, which are related to the foregoing, are the limitations of diversity, since every variable is divided into only two values. There could also be contradictory casual conditions at hand, when using this method (Ragin, 1987: 104, 117).

The advantages are many compared with the disadvantages. The technique gives the researcher an opportunity to investigate a large number of cases. CsQCA aims at

complex causal patterns. These patterns could be compared for instance with multiple casual conditions in statistical analysis. The ability to produce parsimonious explanations could also be seen as an advantage and the ability to investigate the cases both as whole entities and parts give the researcher added value. This provides the opportunity to explain more than could be done with statistical analysis. It is also possible to evaluate competing explanations (Ragin, 1987: 121-123).

The applicability of csQCA is to test earlier studies by transforming them into dichotomous thinking or to evaluate former investigations through the operationalization with csQCA strategies. This technique could also develop empirical typologies or give new insights into new areas of investigation (Ragin, 1987: 125, 151). This method could also be seen as a middle path between generalizations and complexity (Ragin, 1987: 168).

Transformation of Data

As has been argued above, we need to transform every variable into dichotomous thinking according to the nominal scale to be able to assess csQCA. Beginning then with the dependent variable, which is indicated with A (= Degree of Autonomy) in the appendix 1, we see that the variable is running from 0-4.5. The maximum value of 5 is not used, since no region reaches that score. To be able to draw a line between territorial autonomies proper and so called non-autonomous regions, we will use a benchmark of 2.5. This means that all regions scoring over 2.5 will be coded with the value 1 and those regions with the value 2.5 and lower will be coded with the value 0 according to the Boolean strategy.

Looking then at variable D (= Degree of Democracy) we see that the variable is running from 2-14. Here the value 2 is indicating a totally free country according to Freedom House Index, while the value 14 indicates a totally authoritarian regime. We have to use a cutting point here as well to be able to dichotomize this variable. A cutting point at value 7 will be used, meaning that regions which have the value 7 and over will be scored as 0s and those regions that have a value between 2 to 6 are indicated with the value 1.

The historical strategic importance use three dichotomous indicators, but since we are going to use this variable as a combinatorial variable, we have to transform it somehow. Using all three dichotomous indicators would increase the number of conditions and combinations in such a fashion, leading to difficulty receiving meaningful combinations. We will dichotomize the variable according to the following procedure: if a region possesses two or all three characteristics it will be coded with the value 1 and if the region only has one or none characteristic available it will be coded with the value 0.

Geographical distance (= G) is a continuous variable, which varies between 35 km-20 745 km. This means that there is a huge discrepancy between the cases. To find a proper benchmark is difficult, but with help from descriptive statistics, we are able to find a suitable benchmark. Using cluster analysis we find that a suitable cutting point would be at 10 885 km, when dividing the material into two clusters. This means that all regions with less than 10 885 km will be coded with 0, while all other regions with 10 885 km and over will be coded with the value 1.

Parties also use three dichotomous indicators as historical strategic importance. We will also here use a combinatorial variable. All the combinations with regional and separatist parties/movements will be considered the most important ones and will therefore be given the value 1, while those regions with only national parties or lack of parties will reach the value 0.

The last variable, ethnicity, will be scored with value 1 whenever a region possesses some kind of ethnic diversity in relation to its mother country. All indicators are considered equally valid in this context. Those regions, which do not differ in any circumstance, will be coded with the value 0.

The data matrix is shown in appendix 2 with all the csQCA, mvQCA and fsQCA values. The first values are for the csQCA analysis. The analysis is assessed through the Tosmana Software Program.[5]

When running the csQCA within the Tosmana program, there are some choices we can make. I have been chosen to include the outcome variable and exclude all contradictions, reminders and missing values. The contradictions are cases, which share the same combinations but have different outcomes and logical reminders are those combinations that might be theoretically possible, but where no empirical evidence is available. For the positive outcome (1) we receive the following conditions after minimization: g·ED, which means that a short geographical distance in combination with ethnic diversity is leading to territorial autonomy in this context. Testing the variables for necessity we receive the democracy variable and short

distance as necessary conditions for territorial autonomy. Democracy shows a consistency of 0.90 and coverage of 0.51, while short distance shows a consistency level of 0.90 and coverage of 0.49.[6] We have also the possibility to get the result for the negative outcome (0). While running this procedure we receive the following combination: D·h·p·ED, which means that democracy combined with no historical strategic importance, no existence of parties, but existence of ethnic diversity leads to non-autonomy. Testing again the variables according to necessity we find that long geographical distance is necessary for non-autonomy with a consistency level at 0.90 and coverage at 0.51. There seems to be no clear results with csQCA and what also is crucial to mention in this context is that there were nine contradictory combinations in the result, which also signifies an uncertainty in this context. All contradictory cases were excluded in the analysis hence very few cases were actually covered by the solution.

Multi-Value QCA

Multi-Value QCA (mvQCA) has been developed by Lasse Cronqvist as an answer to the critics towards the dichotomization of csQCA (see Cronqvist, 2003, 2005b). The mvQCA is an extension of csQCA and the main idea is to allow multi-value variables in the analysis according to the same csQCA strategies that have been mentioned above. One similarity with csQCA is that we still have a dependent variable, which can only take two values. The extension of mvQCA takes only the independent variables into account. The major differences between csQCA and mvQCA are related to the notation and the minimization rule (Cronqvist, 2005b). Since multi-valued variables can have more than two values, lowercase and uppercase letters

cannot be used. In mvQCA set notation is used to represent the logical configurations of the cases and the implicants (Cronqvist, 2005b). Each logical configuration consists of one or more symbols *X{S}*, where *X* is a variable from the data set and *S* is a set of values of *X*. To take an example, assume we have *I=A{0,1}*, which would indicate that the implicant *I* represents all cases having a value of *A* which is either *0* or *1* (Cronqvist, 2005b). To make the reading more comfortable, the notation $I=A_{0,1}$ can be used. The notation $I=A_{0\text{-}2}$ may be used to indicate *A* having all values between 0 and 2 (Cronqvist, 2005b).

The minimization rule within mvQCA is a generalization of Boolean synthesis. A number of expressions can only be replaced by a reduced expression if all expressions in the data set including the reduced expression have the same outcome (Cronqvist, 2005b). In other words we can rewrite the csQCA rule as follows: "If all *n* multi-value expressions (C0Φ, …, Cn-1Φ) differ only in the casual condition *C* while all *n* possible values of *c* yet produce the same outcome, then the casual condition *C* that distinguishes these *n* expressions can be considered irrelevant and can be removed to create a simpler, combined expression Φ" (Cronqvist, 2005b).

MvQCA might overcome some of the problems arising from the restriction to dichotomous variables used in csQCA, but the researcher must be warned to use too fine-graded variables within the mvQCA technique, as to many possible configurations may single out the cases and hinder meaningful minimization (Cronqvist, 2005b). Some critical points have been made towards this technique (see e.g. Vink and van Vliet, 2007). The critics argue that mvQCA usually uses typically three values instead of two in most circumstances and the question is whether this

technique actually gives any added value, since the technique is hard to understand from a set theoretic point of view. It should be stressed that my interest here is solely a methodological one and my aim is not to present the theoretical arguments behind the discussions for or against one or the other technique. I will just present the different techniques and the results received from these.

Notes about the Transformation of Data

The dependent variable, degree of autonomy, will be following the same logic as in previous analysis. The democracy variable will be transformed with the threshold-setter within the Tosmana program using cluster analysis. We will have one threshold at value 2 (indicating 2 as well in the data matrix), a middle value at 5 (indicating 1 in the data matrix) and an upper limit at 8.5 (indicating 0 in the data matrix). The historical strategic importance will follow the same procedure as in csQCA. Geographical distance will be transformed with the threshold-setter as degree of democracy according to the following benchmarks: 737,5 km for short distance (indicating 0 in the data matrix), 5850 km for a middle-way distance (indicating 1 in the data matrix) and 10 885 km for long distance (indicating 2 in the data matrix). The variables of parties and ethnicity will follow the same procedure as in the previous analysis.

This leads to that we only have been transforming two of the five independent variables in this context. This is due to the fact that we would like to keep the data as similar as possible throughout the analysis. All the mvQCA values are included in

appendix 2 in the first parenthesis. The same strategies as with csQCA will be used to be able to compare the results.

When running the mvQCA technique within the Tosmana program we receive the following results: there are three different paths towards territorial autonomy and these are; D·g·P·ed + d·ED + H·ED. The first path is meaning democracy, combined with short geographical distance, existence of parties/movements and lack of ethnic diversity. The second path can be read out as no democracy combined with ethnic diversity and the last path is historical strategic importance combined with ethnic diversity. These all three paths are valid for leading towards territorial autonomy in this context. While running the analysis for non-autonomy we receive the following conditions: h·g + D·g·P·ED, which means that there are two paths towards non-autonomy. The first path indicating that no historical strategic importance in combination with short geographical distance would lead to non-autonomy and the second path indicating that democracy in combination with short geographical distance, existence of parties/movements and existence of ethnic diversity would lead to non-autonomy. In this analysis it has been harder to minimize and there are still contradictions within the material at nine rows in the truth table within the program.

Fuzzy-Set QCA

Fuzzy-Set QCA (fsQCA) is a further development of the previous techniques. FsQCA can be seen as an alternative approach to conventional statistical techniques and a middle path between quantitative and qualitative research (Ragin, 2000, 2008). FsQCA derives from set theory within mathematical sciences and is somewhat

different from the other two QCA techniques. The values used are always in an interval between 0.0 and 1.0. The value 1.0 indicates full membership in a set, while value 0.0 indicates full non-membership in a class or set (Ragin, 2000: 3-6). It is up to the researcher to choose the values between 0 and 1, but it must always be done openly and explicitly, so that other researchers can test and evaluate the whole fuzzy-set (Ragin, 2000). Fuzzy-set implies both differences in kind and degree at the same time (Ragin, 2000; Kvist, 1999). The value 0.5 is used as a benchmark between what is more in than out and less than 0.5 is more out than in according to a specific set (Ragin, 2000: 157). To construct a fuzzy-set it is necessary to specify qualitative benchmarks on a continuum (between 0.0 and 1.0). This means that the researcher has to combine fuzzy values with substantive theoretical criteria. The method's aim is to establish a better fit between theory and data, which otherwise is impossible with more conventional techniques (Ragin, 2000: 160-162).

Fuzzy membership scores address the varying degree to which different cases belong to sets, not how cases rank relative to each other on dimensions of open-ended scales. Fuzzy-sets pinpoint qualitative approaches while at the same time assessing varying degrees of membership between full inclusion and full exclusion. In this sense, a fuzzy-set can be seen as a continuous variable that has been calibrated to indicate the degree of membership in a defined set (Ragin and Pennings, 2005).

The technique allows us the possibility of studying both qualitative and quantitative variations simultaneously. As a tool it enables us to decide if the changes are marginal in nature when it comes to counting differences in degrees or fundamental when counting differences in kind (Kvist, 1999). FsQCA is used for deciding conjuncture

causation (combinations of conditions) for a specific outcome. The logic behind it is to find causal patterns (i.e. necessary and sufficient casual conditions) behind the variables for the dependent variable (the outcome) (Pennings, 2003).

In fsQCA, it is possible to use the same strategies as in csQCA, but the functions are slightly different. Negation or minimization is used to minimize with 1, e.g. fuzzy-membership in non-A (~A) = 1-fuzzy membership in the set of A. The logical *and* can be established by taking the minimum value of every case in a set, where there is interaction between different values. For example, if a country's value in poor countries is 0.34 and its value in democratic countries is 0.91, then the value in combination of both poor and democratic countries is 0.34. The logical *or* shows the maximum value in combination of every cases' membership in a union. For example, if a country has the value 0.15 in the set of democratic countries and 0.93 in the set of developed countries, then the value 0.93 indicates the set of countries which are either democratic or developed (Smithson and Verkuilen, 2006).

The fuzzy values can be seen as a vector with 2^k corners, where *k* gives the number of attributes or conditions, which are available in a property space. With two fuzzy-sets there are four corners, with three fuzzy-sets there are eight corners and so on. The cases can vary in degree in the crisply defined locations (between fully in and fully out) and have partial membership in every location and in some cases even vary in degree according to membership in the outcome (Ragin, 2000: 183, 194).

The total of logically possible groupings is also possible to calculate, when all separate conditions, all supplementary conditions and all two or more combinations of

conditions are taken into account. The formula is 3^k-1, where *k* again refers to the number of conditions. This means that with three conditions we would have 26 possible groupings, with four 80 and with five as many as 242 groupings (Schneider & Wagemann, 2007). This could be used for multiple tests of sufficiency.

Fuzzy-set values offer a parsimonious way to identify necessary and sufficient conditions, while the values give the opportunity to apply the subset principle. When a case is necessary, then it is the outcome of a subset of the cause (i.e. $Y_i \leq X_i$, or if the outcome is present, then the cause is also necessary). In a case of sufficiency, it is the other way around: the cause is a subset of the outcome (i.e. $X_i \leq Y_i$, or if the cause is present, then the outcome is also present) (Pennings, 2003).

The weakness of fuzzy-set is that it demands a high degree of correspondence between concepts and fuzzy membership values. This means that it necessitates a close observation of analytical constructions of theoretical concepts and empirical evidence, which are both used to indicate membership in the sets. Different criteria are used to establish qualitative benchmarks and translations of data to fuzzy intervals and verbal qualifiers (Kvist, 1999).

Most concepts are vague in social sciences and hard to define or categorize. FsQCA is a proposed method for managing vagueness. The technique helps the researcher to be more explicit about what he or she means and it can be used to help make analyses less fuzzy, when the vagueness is managed formally (Verkuilen, 2005). Smithson argues that fuzzy-set could be appropriate to use along with statistical analyses for evaluating the results (Smithson, 2005).

There seems to be no clear limitations with fsQCA, since the technique could be used in a number of ways. The only limitation is the scale, since every variable has to be between 0 and 1. The researcher decides to which values to use, which can be seen as a weakness at the same time. Much work is up to the researcher. The possibilities with this method seem to be endless in a way. It is up to the investigator to use this method to ones own judgment. The analysis should always be done openly so that the intersubjectivity criterion is maintained. FsQCA could be useful to combine with statistical methods or seen as a separate alternative as such.

Notes about the Transformation of Data

With fsQCA it is possible to use the calibration technique within the fs/QCA program. This means that we can compute the values according to what is fully in a particular set ($X_i \geq 0.95$), what is at the cross-over point ($X_i = 0.50$) and what is fully out according to a set ($X_i \leq 0.05$). This can be done for three of the variables in our data set. The variables which will undergo this calibration are the dependent variable, degree of autonomy (A) and the independent variables of degree of democracy (D) and geographical distance (G). Degree of Autonomy will have the following cutting points: 4.5 for full inclusion in the set of territorial autonomy (i.e. $4.5 \geq 0.95$), 2.5 will be used as the cross-over point (i.e. $2.5 = 0.50$) and value 0 is used for full exclusion in the set of territorial autonomies (i.e. $0 \leq 0.05$). Degree of democracy will have the following benchmarks: $2 \geq 0.95$, $6 = 0.50$ and $10 \leq 0.05$. Geographical distance will follow the following logic: 10 000 km ≥ 0.95, 5000 km $= 0.50$ and 500 km ≤ 0.05.

Historical strategic importance, parties and ethnicity will be coded in another way. The following logic is used for historical strategic importance: if a region has all three indicators available it receives the value 1, if a region has a combination of two indicators it receives the value 0.67. If a region only has one indicator available, it receives the value of 0.33 and lastly if the region lacks any of the characteristics it receives the value 0.

Parties will follow the following logic: if a region has all three indicators available it receives the value 1, if a region has a combination of having regional parties and separatist movements it receives the value 0.83. If a region has a combination of regional parties and national parties it receives the value 0.66, if a region only has regional parties it receives the value of 0.50 and if the region only has national parties available it receives the value 0.33. If the region lacks any party/movement or group it receives the value of 0.16, as there is still political activism available through independents.

Ethnicity is coded according to the following logic: if a region differs in all three aspects it receives the value 1, if a region differs in two aspects it receives the value 0.67 and if a region differs in only one aspect it receives the value 0.33. If a region lacks any diversity it receives the value 0.

With fsQCA it is possible to withhold all variations as much as possible. The fuzzy-set values are all included in the appendix 2 in the second parenthesis. The analysis is hereby conducted with the fs/QCA program according to the Truth Table Algorithm, which can be chosen in the program. First a necessary test will be conducted as has

been made in the csQCA technique. The test shows that democracy is a necessary condition for territorial autonomy to occur with a consistency level at 0.91 and coverage at 0.58. This implies that we can exclude the democracy variable in our further investigation. The fsQCA analysis as such will then take the four remaining explanatory factors into account. Within the program we have to make some choices to be able to run the analysis. First I choose to delete all rows with no empirical cases and then I have to select a threshold for the consistency level for the combinations that remain. Here a consistency level at 0.75 has been chosen. All variables are also selected as present, since we do not know which factor that leads to the outcome in question. The result shows that there are two sufficient paths towards territorial autonomy and those are: ED + G·H, which indicate that ethnic diversity or geographical distance together with historical strategic importance, are leading to the positive outcome in this case. The consistency for ethnic diversity lies at 0.70 and for the second path it lies at 0.71. The whole fuzzy set has a consistency level at 0.67 and coverage at 0.55.

When running the analysis according to the same pattern for non-autonomy we receive the following result: p·ed + G·ed + G·p, which mean that three various paths are leading to the negative outcome. No existence of parties combined with no ethnic diversity illustrates the first path with a consistency level at 0.75. The second path is illustrating the combination of geographical distance together with no ethnic diversity with a consistency at 0.75 as well. The last path shows a combination of geographical distance together with no existence of parties at a consistency level of 0.73. The whole solution shows a consistency at 0.73 and coverage at 0.62.

Summary and Conclusions

This exercise has shown how the different QCA techniques function in practice and what kind of results that we achieve from the three different techniques employing the same data. As a summary the table below shows the results obtained from the three analyses:

--------TABLE ABOUT HERE----------

As the table reveals there are some differences between the various techniques. All analyses give us combinations of factors and within csQCA and fsQCA it is even possible to receive necessary conditions for the explanatory factors. Democracy is the main necessary factor for both analyses. Some other similarities are that there seem to be the same conditions occurring in every technique with few distinctions. Ethnic diversity is one common factor for every analysis. Looking at the result for the positive outcome, which has been under scrutiny we see that there are some differences between the combinations. For csQCA we receive the combination of short geographical distance combined with ethnic diversity and democracy as a necessary condition (short distance is also a necessary condition in this context). For mvQCA we receive the most complex result, three various paths are leading towards territorial autonomy in this case. The first path indicating a combination of democracy, combined with short geographical distance, existence of parties and no ethnic diversity. The second path is showing a combination of no democracy and ethnic diversity, and the last path is showing a combination of historical strategic importance and ethnic diversity. All paths are leading towards territorial autonomy.

FsQCA gives us two paths with the combinations of democracy and ethnic diversity or democracy combined with geographical distance and historical strategic importance. The assessment of the techniques has been done to illustrate the fact what happens when we use various techniques for the same data set. What the results really mean for territorial autonomy through a theoretical perspective would need a different article.

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Appendix 1: Raw Data over the Population

Region	**A**	**D**	**Historical Strategic Importance**			**G**	**Parties**			**Ethnicity**
Autonomy and Non-autonomy	**Score**	**PL and CL**	**Military**	**Colony**	**War or Conflict**	**Km**	**Regional**	**National**	**Separatist**	**Indicator**
Aland Islands (Finland)	3.5	2	Yes	No	Yes	280	Yes	Yes	Yes	Language
American Samoa (US)	3	2	Yes	Yes	No	11870	No	Yes	No	Ethnic origin and language
American Virgin Islands (US)	2.5	2	No	Yes	No	2650	Yes	Yes	No	Ethnic origin
Andalusia (Spain)	4	2	No	No	Yes	420	Yes	Yes	Yes	No diversity
Anguilla (UK)	2.5	2	No	Yes	Yes	8750	Yes	No	No	Ethnic origin
Aruba (NL)	3	2	No	Yes	No	9650	Yes	No	No	Ethnic origin and language
Azores (Portugal)	3	2	Yes	Yes	Yes	1800	Yes	Yes	No	No diversity
Balearic Islands (Spain)	4	2	No	Yes	No	525	Yes	Yes	No	Language
Basque Country (Spain)	4	2	No	No	Yes	280	Yes	Yes	Yes	Language
Bermuda (UK)	3.5	2	Yes	Yes	No	7200	Yes	Yes	No	Ethnic origin and language

Bougainville (PNG)	3	6	No	Yes	Yes	1000	Yes	No	Yes	No diversity
British Virgin Islands (UK)	2.5	2	No	Yes	No	8700	Yes	No	No	Ethnic origin
Canary Islands (Spain)	4	2	Yes	Yes	No	1785	Yes	Yes	No	No diversity
Catalonia (Spain)	4	2	No	No	Yes	490	Yes	Yes	Yes	Language
Cayman Islands (UK)	3.5	2	No	Yes	No	9350	Yes	No	No	Ethnic origin
Cook Islands (NZ)	4.5	2	No	Yes	No	3780	Yes	Yes	No	Ethnic origin
Corsica (France)	1	2	No	No	No	875	Yes	Yes	Yes	Language
Crimea* (Ukraine)	1	6	Yes	No	No	630	Yes	Yes	No	Language
Falkland Islands (UK)	2.5	2	No	Yes	Yes	13500	No	No	No	No diversity
Faroe Islands (DK)	4	2	Yes	No	No	1300	Yes	Yes	Yes	Language
French Polynesia (France)	3.5	2	Yes	Yes	No	18450	Yes	Yes	Yes	Ethnic origin and language
Friulia-Venezia Giulia (Italy)	4.5	2	No	No	Yes	420	Yes	Yes	No	Language
Gagauzia (Moldova)	4	7	No	No	Yes	87,5	Yes	Yes	No	No diversity
Galicia (Spain)	4	2	No	No	Yes	472,5	Yes	Yes	Yes	Language
Gibraltar (UK)	2.5	2	Yes	Yes	No	1800	Yes	No	No	Language and religion
Gorno-Badakhshan (Tajikistan)	0	11	No	No	Yes	300	Yes	Yes	No	No diversity
Greenland (DK)	4	2	Yes	Yes	No	3450	Yes	No	Yes	Ethnic origin and language
Guam (US)	1.5	2	Yes	Yes	Yes	15670	No	Yes	No	Ethnic origin and religion
Guernsey (UK)	4.5	2	Yes	No	No	262,5	No	No	No	Language
Hong Kong* (China)	4	7	Yes	Yes	No	2000	Yes	No	No	Language and religion
Isle of Man (UK)	4	2	Yes	No	No	402,5	Yes	No	No	Language
Jeju Island (South Korea)	1.5	3	No	Yes	No	500	No	Yes	No	No diversity
Jersey (UK)	4	2	Yes	No	No	280	Yes	No	No	No diversity
Karakalpakstan (Uzbekistan)	2	14	No	No	No	800	No	Yes	No	Language
Kosovo* (Serbia)	2.5	11	No	No	Yes	245	Yes	No	Yes	Ethnic origin, language and religion

Macau (China)	4	10	Yes	Yes	No	2000	Yes	No	No	Language and religion
Madeira (Portugal)	3	2	No	Yes	Yes	1092,5	No	Yes	No	No diversity
Mayotte (France)	0.5	2	Yes	Yes	No	8800	Yes	Yes	No	Ethnic origin, language and religion
Mindanao (Philippines)	1	6	Yes	Yes	Yes	900	Yes	No	Yes	Religion
Montserrat (UK)	2.5	2	No	Yes	No	8900	Yes	No	No	Ethnic origin
Nakhichevan (Azerbaijan)	0	11	Yes	No	Yes	300	No	Yes	No	No diversity
Netherlands' Antilles (NL)	3	2	Yes	Yes	No	9850	Yes	No	No	Ethnic origin and language
New Caledonia (France)	4.5	2	Yes	Yes	Yes	19800	Yes	Yes	No	Ethnic origin and language
Niue (NZ)	4.5	2	No	Yes	No	3375	Yes	No	No	Ethnic origin, language and religion
Norfolk Island (Australia)	2.5	2	Yes	Yes	No	2295	No	No	No	Language
NAAR (Nicaragua)	1	6	No	Yes	Yes	400	Yes	Yes	No	Ethnic origin and language
Northern Ireland (UK)	1	2	No	No	Yes	490	Yes	Yes	Yes	Language and religion
Northern Mariana Islands (US)	3.5	2	Yes	Yes	No	15400	Yes	Yes	No	Ethnic origin and language
Oecussi Ambeno (East Timor)	1	7	No	Yes	Yes	150	No	Yes	No	Language
Pitcairn Islands (UK)	1.5	2	No	Yes	No	17640	No	No	No	Ethnic origin and language
Puerto Rico (US)	4.5	2	Yes	Yes	Yes	2500	Yes	Yes	Yes	Language and religion
Rodrigues* (Mauritius)	2	6	No	Yes	No	550	No	Yes	No	No diversity
Sardinia (Italy)	4.5	2	No	No	Yes	420	Yes	Yes	Yes	Language
Scotland (UK)	3.5	2	No	No	No	507,5	Yes	Yes	Yes	No diversity
Sicily (Italy)	4.5	2	No	No	Yes	420	Yes	Yes	No	No diversity
SAAR (Nicaragua)	1	6	No	Yes	Yes	250	Yes	Yes	No	Ethnic origin and

										language
St Helena and Dependencies (UK)	3	2	Yes	Yes	No	8100	No	No	No	Ethnic origin
St Pierre and Miquelon (France)	2.5	2	No	Yes	Yes	4500	Yes	Yes	No	No diversity
Tokelau (NZ)	3	2	No	Yes	No	4320	No	No	No	Ethnic origin and language
Trentino-Alto Adige (Italy)	4.5	2	No	No	Yes	455	Yes	Yes	No	Language
Turks- and Caicos Islands (UK)	4	2	Yes	Yes	Yes	8550	Yes	No	No	Ethnic origin
Valle d'Aosta (Italy)	4.5	2	No	No	Yes	577,5	Yes	Yes	No	Language
Wales (UK)	0.5	2	No	Yes	No	210	Yes	Yes	Yes	Language
Wallis and Futuna* (France)	1.5	6	Yes	Yes	No	20745	Yes	Yes	No	Ethnic origin and language
Zanzibar (Tanzania)	3.5	7	No	Yes	Yes	400	Yes	No	Yes	Religion
Barbuda (Antigua and Barbuda)	*0*	*4*	*No*	*Yes*	*No*	*50*	*Yes*	*Yes*	*No*	*No diversity*
Crete (Greece)	*0*	*3*	*Yes*	*No*	*No*	*315*	*No*	*Yes*	*No*	*No diversity*
Finnmark (Norway)	*0*	*2*	*Yes*	*Yes*	*No*	*1500*	*No*	*Yes*	*No*	*Ethnic origin and language*
Guadeloupe (France)	*0*	*2*	*No*	*Yes*	*Yes*	*8100*	*Yes*	*Yes*	*Yes*	*Ethnic origin*
Malampa (Vanuatu)	*0*	*4*	*No*	*Yes*	*Yes*	*270*	*No*	*Yes*	*No*	*No diversity*
Martinique (France)	*0*	*2*	*Yes*	*Yes*	*Yes*	*8100*	*Yes*	*Yes*	*Yes*	*Ethnic origin*
Príncipe (São Tomé and Príncipe)	*0*	*4*	*No*	*Yes*	*Yes*	*150*	*No*	*Yes*	*No*	*No diversity*
Réunion (France)	*0*	*2*	*Yes*	*Yes*	*Yes*	*9900*	*Yes*	*Yes*	*No*	*Ethnic origin*
Rotuma (Fiji)	*0*	*10*	*No*	*Yes*	*No*	*675*	*No*	*Yes*	*No*	*Ethnic origin and language*
Saaremaa (Estonia)	*0*	*2*	*Yes*	*No*	*Yes*	*192,5*	*No*	*Yes*	*No*	*No diversity*
Santa Isabel (Solomon Islands)	*0*	*7*	*Yes*	*Yes*	*No*	*135*	*No*	*Yes*	*No*	*No diversity*
Southern Great Plain (Hungary)	*0*	*2*	*No*	*No*	*Yes*	*140*	*No*	*Yes*	*No*	*No diversity*
Syddanmark (DK)	*0*	*2*	*No*	*No*	*No*	*180*	*Yes*	*Yes*	*No*	*Language*
Utrecht (NL)	*0*	*2*	*No*	*No*	*Yes*	*35*	*No*	*Yes*	*No*	*No diversity*

Vidzeme (Latvia)	*0*	*2*	*No*	*No*	*Yes*	*87,5*	*No*	*Yes*	*No*	*No diversity*

Sources: *Bonniers stora världsatlas*. Stockholm: Bonnier Lexikon AB, 1994; CIA – The World Factbook 2008 <http://www.cia.gov/library/publications/the-world-factbook/>; Constitution Finder <http://confinder.richmond.edu>; Freedom House <http://www.freedomhouse.org/>. Regions with * indicates regions with own ratings of democracy according to Freedom House Index. The regions in italics indicate the non-autonomous regions in this context.

Appendix 2: Data Matrix over the Population

Region	**A** **csQCA/mvQCA/fs/QCA**	**D**	**H**	**G**	**P**	**ED**
Aland Islands (FIN)	1 (1) (0.82)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.04)	1 (1) (1)	1 (1) (0.33)
Am. Samoa (US)	1 (1) (0.68)	1 (2) (0.95)	1 (1) (0.67)	1 (2) (0.98)	0 (0) (0.33)	1 (1) (0.67)
Am. Virgin Islands (US)	0 (0) (0.50)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.17)	1 (1) (0.66)	1 (1) (0.33)
Andalusia (Spain)	1 (1) (0.90)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (1)	0 (0) (0)
Anguilla (UK)	0 (0) (0.50)	1 (2) (0.95)	1 (1) (0.67)	0 (1) (0.90)	1 (1) (0.50)	1 (1) (0.33)
Aruba (NL)	1 (1) (0.68)	1 (2) (0.95)	0 (0) (0.33)	0 (1) (0.94)	1 (1) (0.50)	1 (1) (0.67)
Azores (Portugal)	1 (1) (0.68)	1 (2) (0.95)	1 (1) (1)	0 (0) (0.11)	1 (1) (0.66)	0 (0) (0)
Balearic Islands (Spain)	1 (1) (0.90)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (0.66)	1 (1) (0.33)
Basque Country (Spain)	1 (1) (0.90)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.04)	1 (1) (1)	1 (1) (0.33)
Bermuda (UK)	1 (1) (0.82)	1 (2) (0.95)	1 (1) (0.67)	0 (1) (0.79)	1 (1) (0.66)	1 (1) (0.67)
Bougainville (PNG)	1 (1) (0.68)	1 (1) (0.50)	1 (1) (0.67)	0 (1) (0.06)	1 (1) (0.83)	0 (0) (0)
British Virgin Islands (UK)	0 (0) (0.50)	1 (2) (0.95)	0 (0) (0.33)	0 (1) (0.90)	1 (1) (0.50)	1 (1) (0.33)
Canary Islands (Spain)	1 (1) (0.90)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.10)	1 (1) (0.66)	0 (0) (0)
Catalonia (Spain)	1 (1) (0.90)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (1)	1 (1) (0.33)
Cayman Islands (UK)	1 (1) (0.82)	1 (2) (0.95)	0 (0) (0.33)	0 (1) (0.93)	1 (1) (0.50)	1 (1) (0.33)
Cook Islands (NZ)	1 (1) (0.95)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.31)	1 (1) (0.66)	1 (1) (0.33)
Corsica (France)	0 (0) (0.14)	1 (2) (0.95)	0 (0) (0)	0 (0) (0.06)	1 (1) (1)	1 (1) (0.33)
Crimea (Ukraine)	0 (0) (0.14)	1 (2) (0.50)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (0.66)	1 (1) (0.33)
Falkland Islands (UK)	0 (0) (0.50)	1 (2) (0.95)	1 (1) (0.67)	1 (2) (0.99)	0 (0) (0.16)	0 (0) (0)
Faroe Islands (Denmark)	1 (1) (0.90)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.08)	1 (1) (1)	1 (1) (0.33)
French Polynesia (France)	1 (1) (0.82)	1 (2) (0.95)	1 (1) (0.67)	1 (2) (1)	1 (1) (1)	1 (1) (0.67)
Friulia-Venezia Giulia (I)	1 (1) (0.95)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (0.66)	1 (1) (0.33)
Gagauzia (Moldova)	1 (1) (0.90)	0 (1) (0.32)	0 (0) (0.33)	0 (0) (0.04)	1 (1) (0.66)	0 (0) (0)
Galicia (Spain)	1 (1) (0.90)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (1)	1 (1) (0.33)
Gibraltar (UK)	0 (0) (0.50)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.11)	1 (1) (0.50)	1 (1) (0.67)
Gorno-Badakhshan (Tajik.)	0 (0) (0.05)	0 (0) (0.02)	0 (0) (0.33)	0 (0) (0.04)	1 (1) (0.66)	0 (0) (0)
Greenland (Denmark)	1 (1) (0.90)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.26)	1 (1) (0.83)	1 (1) (0.67)

Guam (US)	0 (0) (0.23)	1 (2) (0.95)	1 (1) (1)	1 (2) (1)	0 (0) (0.33)	1 (1) (0.67)
Guernsey (UK)	1 (1) (0.95)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.04)	0 (0) (0.16)	1 (1) (0.33)
Hong Kong (China)	1 (1) (0.90)	0 (1) (0.32)	1 (1) (0.67)	0 (0) (0.12)	1 (1) (0.50)	1 (1) (0.67)
Isle of Man (UK)	1 (1) (0.90)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.04)	1 (1) (0.50)	1 (1) (0.33)
Jeju Island (South Korea)	0 (0) (0.23)	1 (2) (0.90)	0 (0) (0.33)	0 (0) (0.05)	0 (0) (0.33)	0 (0) (0)
Jersey (UK)	1 (1) (0.90)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.04)	1 (1) (0.50)	0 (0) (0)
Karakalpakstan (Uzbek.)	0 (0) (0.35)	0 (0) (0)	0 (0) (0)	0 (0) (0.06)	0 (0) (0.33)	1 (1) (0.33)
Kosovo (Serbia)	0 (0) (0.50)	0 (0) (0.02)	0 (0) (0.33)	0 (0) (0.04)	1 (1) (0.83)	1 (1) (1)
Macau (China)	1 (1) (0.90)	0 (0) (0.05)	1 (1) (0.67)	0 (0) (0.12)	1 (1) (0.50)	1 (1) (0.67)
Madeira (Portugal)	1 (1) (0.68)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.07)	0 (0) (0.33)	0 (0) (0)
Mayotte (France)	0 (0) (0.08)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.91)	1 (1) (0.66)	1 (1) (1)
Mindanao (Philippines)	0 (0) (0.14)	1 (1) (0.50)	1 (1) (1)	0 (0) (0.06)	1 (1) (0.83)	1 (1) (0.33)
Montserrat (UK)	0 (0) (0.50)	1 (2) (0.95)	0 (0) (0.33)	0 (1) (0.91)	1 (1) (0.50)	1 (1) (0.33)
Nakhichevan (Azerbaijan)	0 (0) (0.05)	0 (0) (0.02)	1 (1) (0.67)	0 (0) (0.04)	0 (0) (0.33)	0 (0) (0)
Netherlands' Antilles (NL)	1 (1) (0.68)	1 (2) (0.95)	1 (1) (0.67)	0 (1) (0.95)	1 (1) (0.50)	1 (1) (0.67)
New Caledonia (France)	1 (1) (0.95)	1 (2) (0.95)	1 (1) (1)	1 (2) (1)	1 (1) (0.66)	1 (1) (0.67)
Niue (NZ)	1 (1) (0.95)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.25)	1 (1) (0.50)	1 (1) (1)
Norfolk Island (Australia)	0 (0) (0.50)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.14)	0 (0) (0.16)	1 (1) (0.33)
North Atlantic AR (Nic.)	0 (0) (0.14)	1 (1) (0.50)	1 (1) (0.67)	0 (0) (0.04)	1 (1) (0.66)	1 (1) (0.67)
Northern Ireland (UK)	0 (0) (0.14)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (1)	1 (1) (0.67)
Northern Mariana Isl. (US)	1 (1) (0.82)	1 (2) (0.95)	1 (1) (0.67)	1 (2) (1)	1 (1) (0.66)	1 (1) (0.67)
Oecussi Ambeno (East T.)	0 (0) (0.14)	0 (1) (0.32)	1 (1) (0.67)	0 (0) (0.04)	0 (0) (0.33)	1 (1) (0.33)
Pitcairn Islands (UK)	0 (0) (0.23)	1 (2) (0.95)	0 (0) (0.33)	1 (2) (1)	0 (0) (0.16)	1 (1) (0.67)
Puerto Rico (US)	1 (1) (0.95)	1 (2) (0.95)	1 (1) (1)	0 (0) (0.16)	1 (1) (1)	1 (1) (0.67)
Rodrigues (Mauritius)	0 (0) (0.35)	1 (2) (0.50)	0 (0) (0.33)	0 (0) (0.05)	0 (0) (0.33)	0 (0) (0)
Sardinia (Italy)	1 (1) (0.95)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (1)	1 (1) (0.33)
Scotland (UK)	1 (1) (0.82)	1 (2) (0.95)	0 (0) (0)	0 (0) (0.05)	1 (1) (1)	0 (0) (0)
Sicily (Italy)	1 (1) (0.95)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (0.66)	0 (0) (0)
South Atlantic AR (Nic.)	0 (0) (0.14)	1 (1) (0.50)	1 (1) (0.67)	0 (0) (0.04)	1 (1) (0.66)	1 (1) (0.67)
St Helena and Dep. (UK)	1 (1) (0.68)	1 (2) (0.95)	1 (1) (0.67)	0 (1) (0.87)	0 (0) (0.16)	1 (1) (0.33)
St Pierre and Miquelon (F)	0 (0) (0.50)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.42)	1 (1) (0.66)	0 (0) (0)
Tokelau (NZ)	1 (1) (0.68)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.39)	0 (0) (0.16)	1 (1) (0.67)
Trentino-Alto Adige (I)	1 (1) (0.95)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (0.66)	1 (1) (0.33)
Turks- and Caicos Isl. (UK)	1 (1) (0.90)	1 (2) (0.95)	1 (1) (1)	0 (1) (0.89)	1 (1) (0.50)	1 (1) (0.33)
Valle d'Aosta (Italy)	1 (1) (0.95)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.05)	1 (1) (0.66)	1 (1) (0.33)
Wales (UK)	0 (0) (0.08)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.04)	1 (1) (1)	1 (1) (0.33)

Wallis and Futuna (France)	0 (0) (0.23)	1 (1) (0.50)	1 (1) (0.67)	1 (2) (1)	1 (1) (0.66)	1 (1) (0.67)
Zanzibar (Tanzania)	1 (1) (0.82)	0 (1) (0.32)	1 (1) (0.67)	0 (0) (0.04)	1 (1) (0.83)	1 (1) (0.33)
Barbuda (Antigua and Bar.)	0 (0) (0)	1 (2) (0.82)	0 (0) (0.33)	0 (0) (0.04)	1 (1) (0.66)	0 (0) (0)
Crete (Greece)	0 (0) (0)	1 (2) (0.90)	0 (0) (0.33)	0 (0) (0.04)	0 (0) (0.33)	0 (0) (0)
Finnmark (Norway)	0 (0) (0)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.09)	0 (0) (0.33)	1 (1) (0.67)
Guadeloupe (France)	0 (0) (0)	1 (2) (0.95)	1 (1) (0.67)	0 (1) (0.87)	1 (1) (1)	1 (1) (0.33)
Malampa (Vanuatu)	0 (0) (0)	1 (2) (0.82)	1 (1) (0.67)	0 (0) (0.04)	0 (0) (0.33)	0 (0) (0)
Martinique (France)	0 (0) (0)	1 (2) (0.95)	1 (1) (1)	0 (1) (0.87)	1 (1) (1)	1 (1) (0.33)
Príncipe (São Tomé and P.)	0 (0) (0)	1 (2) (0.82)	1 (1) (0.67)	0 (0) (0.04)	0 (0) (0.33)	0 (0) (0)
Réunion (France)	0 (0) (0)	1 (2) (0.95)	1 (1) (1)	0 (1) (0.95)	1 (1) (0.66)	1 (1) (0.33)
Rotuma (Fiji)	0 (0) (0)	0 (0) (0.05)	0 (0) (0.33)	0 (0) (0.05)	0 (0) (0.33)	1 (1) (0.67)
Saaremaa (Estonia)	0 (0) (0)	1 (2) (0.95)	1 (1) (0.67)	0 (0) (0.04)	0 (0) (0.33)	0 (0) (0)
Santa Isabel (Solomon Isl.)	0 (0) (0)	0 (1) (0.32)	1 (1) (0.67)	0 (0) (0.04)	0 (0) (0.33)	0 (0) (0)
Southern Great Plain (H)	0 (0) (0)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.04)	0 (0) (0.33)	0 (0) (0)
Syddanmark (Denmark)	0 (0) (0)	1 (2) (0.95)	0 (0) (0)	0 (0) (0.04)	1 (1) (0.66)	1 (1) (0.33)
Utrecht (NL)	0 (0) (0)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.04)	0 (0) (0.33)	0 (0) (0)
Vidzeme (Latvia)	0 (0) (0)	1 (2) (0.95)	0 (0) (0.33)	0 (0) (0.04)	0 (0) (0.33)	0 (0) (0)

Key: A = Degree of Autonomy
D = Degree of Democracy
H = Historical Strategic Importance
G = Geographical Distance
P = Existence of Parties/Movements/Groups
ED = Ethnic Diversity

Table of the Results:

Analysis	Configurations		Consistency		Coverage	
csQCA	**A:** gED	**~A:** DhpED	**Necessary Conditions:** **A:** D: 0.90 ~G: 0.90	 **~A:** G: 0.90	 **A:** D: 0.51 ~G: 0.51	 **~A:** G:0.49
mvQCA	D{2}G{0}P{1}ED{0}+ D{0}ED{1}+H{1}ED{1}	H{0}G{0}+ D{1,2}G{0}P{1}ED{1}				
fsQCA	DED+DGH	ped+Ged+Gp	D: 0.91 **Solution:** 0.67	 **Solution:** 0.72	D: 0.58 **Solution:** 0.55	 **Solution:** 0.62

Key: A = Territorial Autonomy
~A = Non-Autonomy, the sign "~" signifies negation
For fsQCA D = democracy is also included in the both paths for A, since democracy is found as a necessary condition. For all acronyms, see in the text or in the appendices.

Notes

[1] Author's Note: Earlier versions of related drafts have been presented at the Nordic Congress in Political Science in Reykjavik, Iceland 2005, at the International Conference on Comparative Social Sciences in Tokyo, Japan 2006 and at the American Political Science Association Annual Meeting in

Chicago, USA 2007. The author is grateful for all comments and contributions made by scholars from different audiences, and special thanks goes to Charles C. Ragin for his generous help and suggestions. This version is, however, a totally revised article and the usual disclaimers apply.

[2] The data base can be received upon request.

[3] See e.g. the issue of *Qualitative Methods*, Newsletter of the American Political Science Association, Organized Section on Qualitative Methods, spring 2007, Vol. 5, No. 1. For a discussion linking fuzzy-set and statistics, see Michael Smithson, 'Fuzzy Set Inclusion: Linking Fuzzy Set Methods with Mainstream Techniques' in *Sociological Methods & Research*, Vol. 33, No. 4, May 2005, pp. 431-461. For a more general overview of the state of the art, see James Mahoney, 'Qualitative Methodology and Comparative Politics' in *Comparative Political Studies*, Vol. 40, No. 2, February 2007, pp. 122-144.

[4] See Ackrén, forthcoming 2009, for a more thorough discussion about the operationalization and the selection of cases.

[5] There are two programs available, when it comes to employ the various QCA techniques. They can both be freely downloaded from Internet. The Tosmana Software Program has been developed by Lasse Cronqvist, Marburg University, Germany and is available at: <http://www.tosmana.net/> and the other program called fs/QCA has been developed by Charles C. Ragin and Kriss Drass, University of Arizona, USA and is available at: <http://www.u.arizona.edu/~cragin/fsQCA/software.shtml>. Tosmana can only be used for csQCA and mvQCA, while fs/QCA can only be used for csQCA and fsQCA. I will use both programs in this investigation, but for the analyses with csQCA and mvQCA I will use Tosmana and for the fsQCA I will use fs/QCA. The csQCA can be conducted in both programs, but both analyses would show the same results so there is no need to run the analysis twice.

[6] The necessity tests have been conducted in the fs/QCA program.