

The Respect for Civil Liberties in Post-Communist Countries: A Multi-Methodological Test of Structural Explanations¹

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Abstract. This paper aims at uncovering factors explaining extent of membership in the group of liberal polities among the post-communist countries. The empirical examination makes use of three methodological tools – crisp-set method, fuzzy-set method, and OLS-regression – associated with two different approaches – diversity-oriented and variable-oriented – to test theoretically different structural conditions/variables supposed to facilitate the development of civil liberties. Six factors are included in the analysis: ethno-religious diversity, natural resources, early development, and three modernization indicators, i.e., GDP/cap., education and agricultural employment. The results diverge considerable between different approaches, but minimally between the QCA methods connected to the same approach. The OLS-regression shows that early development, ethnic diversity, and education are significantly correlated with civil liberty; education, though, not in the theoretically expected direction. On the other hand, the crisp-set analysis, using logical cases in the reduction procedure, points out early developed and not early developed as a necessary and sufficient condition for the existence and absence of a liberal regime, respectively. Finally, the fuzzy-set analysis, very similarly, emphasizes early development as a sufficient condition for liberal regimes in the post-communist context, if an inclusion of all simplifying assumptions is allowed, and three paths to a not liberal regime are uncovered, that is, the conjunction of the necessary condition not early developed with either not wealthy, not independent of natural resources, or not low agricultural employment rate. Thus, early development is undoubtedly identified as the most important factor in the explanation of the respect for civil liberty in post-communist countries. Regarding the QCA methods, they appear to be valuable supplements and at times even alternatives to standard statistical tests – the fuzzy-set method probably somewhat more than the crisp-set method – especially when the case number is rather low and when the relationship between the phenomenon to be explained and the explanatory factors is characterized by multiple conjunctural causation and necessity and/or sufficiency.

Key Words: Crisp-Set Method, Fuzzy-Set Method, Civil Liberties, Post-Communist Countries, Structural Explanations, Multi-Methodological Test

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Since the breakdown in 1989-91 of the single-party regimes placed on the eastern side of the iron curtain, the different countries have followed different courses of regime development, ranging from a reintroduction of some kind of authoritarianism to the successful installation of democracies. This paper aims at uncovering the causal factors explaining the respect for civil liberties in some of the European post-communist countries and severe disrespect in others more than a decade after the breakdown of the communist regimes. Even though all the cases have been characterized by liberalization attempts after the collapse of the former regimes, their contemporary levels of civil freedoms diverge considerably.

In the various and abundant democratization studies following the Third Wave there has been a tendency to focus on either the electoral dimension of democracy or a combination of the electoral dimension and civil liberties. A prevalent consequence of this dominant agenda has been the neglect of an exclusive focus on the respect and disrespect of civil liberties. This topic has mainly been investigated as part of the concept of democracy, but although both elections and civil liberties constitute important elements of the same overarching concept, a separate treatment seems to be more fruitful because of the possibility that the key explanatory factors of the main conceptual dimensions diverge.

The impact of structural factors will be the primary focus of this study. Although the knowledge provided by more actor and process-centred approaches should not be neglected in an investigation of political outcomes, this study puts a methodological parenthesis around strictly actor-oriented explanations. This approach, mainly occupied with the actions of political elites, is left out because this topic has been at the centre of attention in most case studies and because the study also has got a second intention: a comparison of three different methodological tools. Consequently, the analysis here focuses on structural factors role in the period after the phases of communist breakdown and the elaboration of a new institutional framework.

Moreover, the examination of structural conditions explaining the amount of democracy or related topics in post-communist countries based on some kind of systematic (mathematic) comparative reasoning has been somewhat rarer than pure qualitative studies, though not fully neglected (cf. Fish, 1998; 2001; Frye, 1997; Kopstein & Reilly, 2000; Kurtz & Barnes, 2002; Johannsen, 2000). In addition, the methods applied by previous studies have, without exception, been based on linear algebra, primarily OLS-regression, while the present analysis also applies the crisp-set and fuzzy-set methods introduced to the social sciences by Charles Ragin (1987, 2000) and Michael Smithson (1987). These methods, respectively based on Boolean and fuzzy algebra,

constitute new and promising methodological tools, which can be regarded as an attempt to narrow the gap between quantitative and qualitative approaches well-suited to analyse structural explanations with a medium-sized N, say 8-50. Because of their capacity to uncover how *multiple factors combine in different ways* in the determination of the specific outcome to be explained as well their ability to distinguish between necessary and sufficient causes, an analysis with this focus and method might provide a significant contribution to the understanding of the topic in question.

In contrast to most previous cross-national studies, Serbia-Montenegro, Bosnia-Herzegovina and Mongolia are also examined, so the group of cases consists of all the 28 post-communist countries that experienced major political changes in the late eighties and early nineties.² These countries furnish a promising background for assessing the factors facilitating or, at least, accompanying their (possibly and probably partial) membership in the set of liberal regimes. Basically, such intra-regional comparisons allow us to strike a balance between the benefits of comparison – the ability to control for some factors while exploring variation – and the benefits of working with matching data and categories, which can yield substantial findings (Bunce, 1995: 981).

To this must be added the particular appeal of comparing the post-communist countries with each other. Firstly, they are of a sufficient number to allow for sophisticated sample construction, i.e., the medium-N is large enough to carry out feasible comparisons of cases situated within one region in a systematic and rather formalized way. Secondly, the region in question embodies great variation on the outcome ranging from predominantly liberal regimes to outright authoritarian regimes characterized by a very low acceptance of basic civil freedoms. Moreover, the countries under examination provide meaningful variation across theoretically relevant causal factors because of substantial differences while they, at the same time, share a somewhat similar economic, political, and social (near) history as a consequence of the effects of communist one-party rule. In this way, the region was united by a meaningful summary of interwoven political, social, and economic characteristics, such as planned economies and rather similar governing structures and institutions, at the outset of the major changes (Bunce, 1995: 981; Fish, 1998: 214-215). Finally, the breakdown of the former regimes happened practically simultaneously, a fact that functions as a control for the effect of the general international environment, which during the Cold War often turned out to be hostile to liberalization efforts, whereas, currently, it seems to be liberty promoting.

² The only exception is East Germany, which is excluded from the analysis because of its reunification with West Germany which makes it an extraordinary case.

In short, this paper examines the connection between structural factors and civil liberty performance in post-communist countries by the use of three methodological tools. In order to do so, first the outcome/dependent variable civil liberty is defined and operationalized and second some prominent and theoretically plausible structural conditions/independent variables suggested to explain civil liberty are presented and selected for further investigation. Then the paper introduces the crisp-set and fuzzy-set methods in some detail since familiarity with their operation cannot yet be taken for granted because they have just recently been made known and, at least partly, recognized as fruitful tools for social scientists. It proceeds with a calibration of the raw data in crisp-set and fuzzy-set membership values to be used in the subsequent empirical analysis. This analysis then in three steps – one for each method – scrutinizes, which of the structural factors the different methods point out as important for a country's fully or partly inclusion in the group of liberal regimes. Finally, the conclusion compares the results and elaborates on the comparative advantages and disadvantages of the methods utilized.

Defining and Operationalizing Civil Liberty

A liberal regime, here treated as the outcome/dependent variable, must be defined and its basic measures specified. A liberal regime can be defined as a political regime based on the principle saying that the rule has to be characterized by an extensive degree of civil liberty. In specific, it has to respect devices established to secure the citizens liberty, that is, freedom of speech and press, freedom of organization and assembly, freedom of movement, freedom of religion, and freedom from biased verdict as secured by independent courts.

The cases have been assigned civil liberty scores on the background of subjective assessments of the State Department's *Country Reports on Human Rights Practices* using a standardized coding procedure provided by Cingranelli and Richards in connection to their CIRI Human Rights Dataset (Cingranelli & Richards, 2004). The dataset consists of five indicators measuring each of the emphasized features by assessments of the numerical ratings zero, one or two for each country; two representing the most free and zero the least free. On this basis, a simple, additive index reflecting the definition just presented is constructed³ and rescaled, so its range goes from 0 to 100, 100 indicating the highest level of civil liberty.

As it seems unsatisfying only to assess a country's respect for civil liberty by the ratings received in one year, the index scores used in the empirical analysis will be based on the simple

³ Item-item correlations (Gamma) fluctuate between 0.74 and 0.98, and the item-index correlations range from 0.79 to 0.95. Cronbach's Alpha is 0.89 and cannot be improved by the removal of any of the indicators.

average level of civil liberty (average combined scores) for five years (1999-2003). In this way, the measure will not be so sensible to short-term fluctuations and thus is more suitable to capture whether the level of respect for civil liberties is steadily supported by the significant political actors and can be expected to be upheld in the nearest future. To be brief, the deepness of commitment to liberty is reflected by the political behaviour in the near past. The focus on structural background explanations also justifies this move.⁴

Structural Explanations of Civil Liberty

The endeavour to explain the level of civil liberties in a post-communist setting builds on the theoretical issues found in the broader comparative politics literature on democratization, which seems to be a good starting point as the theoretical propositions concerning exclusively concerning are rather underdeveloped. On the other hand, not all theoretical explanations advanced in the literature will be considered. As befits a social scientific research field receiving much attention, a huge amount of hypotheses have been put forward (cf. Huntington, 1991: 37-38; Berg-Schlosser & Mitchell, 2000: 3-14; Burnell & Calvert, 1999: 8-17), all attempting to explain why some countries are able to sustain and deepen democracy, whereas others become some kind of defect democracies (cf. Merkel & Crossaint, 2000; Zakaria, 1997; Collier & Levitsky, 1997) failing to meet minimal liberal-democratic standards or, most radically, fall back into outright authoritarianism. It is unfeasible to present all of the theoretical arguments in their different shades and even less to include them all in the subsequent analysis. Thus, only some of the most prominent hypotheses accentuated in former studies and of apparent relevance for the countries in question are selected for further investigations. Moreover, the causal arguments to be examined are remote (i.e., structural) conditions/independent variables being, to a large extent, stable and outside the control of the current actors, in contrast to more proximate factors that vary over short time periods and are more directly dependable of the actions of central actors (cf. Kitschelt, 2003).

Modernization. The modernization theory is undoubtedly the most prominent of the suggested explanations. According to this perspective, a high level of socio-economic development promotes democracy, including civil liberties (Lipset, 1959; Diamond, 1992). The argument goes that modernization enhances the possibilities of regimes to become and/or stay more liberal due to

⁴ On the background of these reasons relating more or less directly to the present level of democracy, I do not think that my operationalization confuses the concepts of political democracy and stability – a common flaw exposed by Kenneth A. Bollen (1993: 8).

developments in the individual level as citizens become more tolerant, informed, moderate, and post-materialistic; developments in the class structure leading to less conflicts, less zero sum games, and altered interest coalitions, and, finally, the civil society gets more pluralized, empowered and autonomous from the state. Several studies have shown that countries embarking upon liberalization and democratization benefit from a high level of socio-economic development (Huntington; 1991: 272-273; Lipset et al., 1993; Przeworski et al., 1996; Przeworski & Limongi, 1997). Then again, other studies centred on the post-communist region on the other hand have offered ambivalent results (Fish, 1998; 2001; Kurtz & Barnes, 2002).

In his seminal article, Lipset measures modernization by diverse indices of wealth, industrialization, education, and urbanization (1959: 76-77). One of his wealth indicators was GDP/cap., which is the measure used in most studies, including this one. In order to control for the huge distortions faced by the post-communist countries alongside the political changes, the data assign to 1989. Moreover, the figures used are controlled for differences in power purchase parity (PPP). Industrialization is, again following Lipset, measured by the percentage of agricultural employment, which also is an indication of the political base that might plausibly fall under agrarian upper class domination or its equivalent (Kurtz & Barnes, 2002: 529; cf. Moore, 1991). Finally, education is measured by a composite index⁵ constructed of the four indicators used by Lipset, that is, literacy rate and enrolment in primary, secondary and tertiary education, whereas urbanization is excluded from the empirical analysis in order to reduce the number of explanatory factors and because it has the least and most indirect theoretical foundation.

Natural Resources. The extraction of oil and other natural resources such as ores and metals is a further interesting structural factor recently emphasized in a time-series cross-national study by Michael L. Ross (2001). Drawing on knowledge of Middle Eastern countries the argument has been put forward that governments use their revenues from natural resources to relieve social pressures that might otherwise lead to demands for greater liberty. Governments are likely to tax their populations less heavily or not at all, and the public in turn will be less likely to demand accountability from their government. A greater spending on patronage is another possible determinant in dampening latent pressures for liberalization. Moreover, the government can use its rather unconstrained wealth to prevent the formation of social groups that are independent from the

⁵ The formula is: Education = (literacy rate + (2 * combined gross enrolment ratio))/3

state and hence that may be inclined to demand civil liberties. Taken together, these effects constitute a rentier effect implying less civil liberty (Ross, 2001: 332-335).

The present study measures the reliance on natural resources by the value of natural resource (fuel as well as ores and metals) exports divided by GDP (PPP), in this way capturing both the importance of minerals and fuels as sources of export revenue as well as their relative importance in the domestic economy (cf. Ross, 2001: 338).

Ethno-religious Diversity. Another widely recognized factor in the literature on democratization is the ethnic and religious composition of a society. This explanation points out the lack of a common basis of identification as a determinant of democratic failure (Stuart Mill, 1993: 392-393; Dahl, 1971: 105-123; Diamond & Plattner, 1994). Ethnic and religious diversity is often held responsible for failed democratizations for the reason that this factor diminishes the prospects for compromises and heightens the risk of civil controversies. Nationalistic politicians get a chance to mobilize different parts of the population against each other and the rights of minority groups are likely to be violated and subordinated to authoritarian actions (Horowitz, 1993: 19-20). This could very likely be the beginning of a more general decline in the observance of liberal-democratic rules. The cases of military conflict between different ethnic groups in, for example, Moldova, former Yugoslavia and Georgia emphasize the apparent relevance of this factor, while statistical studies focusing on the post-communist countries, on the other hand, have not demonstrated any significant correlation between ethnic homogeneity and the level of democracy (Fish, 1998; Johannsen, 2000: 177).

The Ethnic-religious Diversity is measured by the average of the CIFP global rank based index scores for ethnic and religious diversity,⁶ which are based on the number of ethnic groups and religious groups, respectively, in a country weighted by the fraction of the population each group represents, so both the number and the sizes of ethnic and religious groups jointly determine the degree of diversity.⁷ The score was rescaled and inverted, so it ranges from 0 to 100 and a high value means low diversity.

Early Development. The last explanatory factor included is very much inspired by Kitschelt (2001, 2003), who has drawn attention to diverse elements of the pre-communist experience of the countries that influence the formation of beliefs about the viability and desirability of liberal reform.

⁶ Each of them ranging from 1 to 9, where 1 refers to low diversity and 9 to high diversity.

⁷ The formula is: Ethnic Diversity = $1 - \frac{\sum_{i=1}^j n_i^2}{N^2}$, where n_i is the size of ethnic group i , N is the total population of the country, and j is the number of ethnic groups. The same procedure is used in the calculation of religious diversity.

According to Kitschelt, the experiences with economic industrialization, state formation, and democratization before communist rule were critical for such prior beliefs and expectations. More democracy in pre-communist times translates into more confidence in political and civil freedoms after communism. In the interwar period, among the observed cases only the Czech Republic had more than decade long experiences with full electoral democracy and strong working class mobilization, but in East-Central Europe a number of other countries had semi-authoritarian regimes with constrained elections that nevertheless permitted some civil liberties and political rights of participation. These countries clearly distinguish themselves from pre-communist South-East Europe and the Tsarist Russian Empire, where both popular demand and capacities for political interest articulation and representation were less developed than in East-Central Europe, and incumbent authoritarian regimes tightly regimented and suppressed such demands (Kitschelt, 2001: 5).

What is more, the Prussian Empire and the Habsburg Empire developed capacities for state governance, exemplified by a judiciary applying formal legal code and a professional civil service. Within the Tsarist Empire, on the other hand, conditions concerning the rule of law and civil service professionalism were highly diverse. The most Western and North-Western areas late incorporated in the empire demonstrated higher levels of state and civil service formation, whereas the Caucasian and Central Asian parts characterized by non-state tribal and clan-based societies furnished the least capacities for state governance, where the core areas of the Tsarist Empire (Russia, Belarus, Ukraine) and South-Eastern Europe experienced rather similar developmental levels in between. Especially Slovakia and Croatia are borderline cases within this framework. Before Slovakia was incorporated and subordinated under Czech rule through out much of interwar, communist, and early post-communist rule, it was a backward region with little state formation and economic development. Also Croatia constituted an undecided case state formation before World War I and then was subordinated to authoritarian and later communist Yugoslav rule (Kitschelt, 2001: 7).

Regarding measurement of early development, the Czech Republic obtains the highest score (40), while the Baltic States together with Hungary, Poland, and Slovenia receive somewhat less (30). The countries in the South-Eastern part of Europe and Russia, Belarus, and Ukraine even lower ratings (20) and the Caucasian and Central Asian countries the lowest (10). Slovakia and Croatia are, also in line with the argumentation above, given lower scores on the suggested liberty

promoting factor early development than the other East-Central European countries, but higher than the rest (i.e., 25).⁸

QCA Methods

The 28 cases will be examined through the use of the so-called diversity-oriented approach (Ragin, 2000). This approach attempts to transcend the gap between qualitative case-oriented approaches and quantitative variable-oriented approaches,⁹ based on the assumption that many of the special features of qualitative research should be integrated into quantitative research (Ragin, 2000: 14) instead of just improving qualitative research by making it as close to quantitative research as possible – as advocated by King, Keohane, and Verba (1994).

Like the ordinary case-oriented approach, this approach does not treat cases as mere variables, but as wholes, i.e., the different parts of a case are defined in relation to each other. This view suggests that by changing important aspects of a case, the character of the case as a whole will potentially be altered (Ragin, 2000: 39). Furthermore, these approaches share the view that causation is conjunctural and heterogeneous. In other words, there is no claim that the same causal factors operate in the same way in all contexts in all cases. The effect on any particular causal condition may depend on the presence or absence of other conditions and several different conditions may satisfy a general causal requirement (Ragin, 2000: 40). In this way, the method is able to examine whether a particular outcome (e.g., liberal regime) is brought about by dissimilar and/or conjunctural causes (e.g., wealthy *and* independence of natural resources *or* high level of education *and* ethno-religious homogeneity).

On the other hand, the diversity-oriented approach and its associated methods (cs/QCA and fs/QCA) also share various similarities with the variable-oriented approach in that they both take a broad view of social phenomena and subjugate data to some kind of mathematical manipulation. A major difference, though, is that, in contrast to the statistical methods connected to the variable-oriented approach, the QCA methods well suited to establish and distinguish between necessary and sufficient causes of social phenomena.

⁸ All scores in accordance with Kitschelt's (2001: 7; 46-47). Bosnia-Herzegovina, Serbia-Montenegro, and Mongolia are assigned scores according to their historical-geographical affiliation to South-Eastern Europe and Central Asia, respectively.

⁹ Respectively representing two opposite positions in the well-known trade-off between complexity and generality, where case-oriented research tends to back an ideographic view in which all cases are different, and variable-oriented research tends to emphasize lawful relationships between variables from a nomothetic point of view.

Cs/QCA

Crisp-set analysis is grounded in Boolean algebra, the algebra of logic and set-theoretical relationships. Social scientific researchers interested in demonstrating necessity and/or sufficiency must address set theoretic relations using the subset principle. In relation to necessity, the principle says that whenever a causal condition is necessary, but not sufficient for an outcome, instances of the outcome are a subset of instances of the causal condition (Ragin, 2000: 214). Taken together, in the case of necessity every instance of the outcome (civil liberty) should involve the presence of a causal factor (e.g., ethno-religious homogeneity),¹⁰ whereas the reverse situation not always applies since a cause can be necessary without being sufficient. An illustrating example of the logic would be that a high IQ (supposedly) is a necessary condition for attaining a professorship, but for many reasons far from all highly intelligent persons become professors.

In relation to sufficiency, the principle says that whenever a causal condition is sufficient but not necessary for an outcome, instances of the causal condition are a subset of the outcome (Ragin, 2000: 235). This implies that a particular condition (e.g., modernization) – alone or in combination with other conditions – generates the outcome, but, at the same time, the outcome may be a consequence of alternative conditions (e.g., ethnic homogeneity). An additional example, illustrating this point, would be that having a high IQ (probably) is a sufficient condition for being envied, but not all persons being envied are highly intelligent persons. They can also be envied because of their wealth, looks etc. Table 1 shows the case distribution that would accompany the finding that a cause is necessary (N), sufficient (S) or both (NS) (Ragin, 2000: 97-98).

Table 1: Assessment of Necessity and/or Sufficiency

	Cause Absent	Cause Present
Outcome Present	N: no cases S: not relevant NS: no cases	N: cases S: cases NS: cases
Outcome Absent	N: not relevant S: not relevant NS: not relevant	N: not relevant S: no cases NS: no cases

¹⁰ Following the logic of ‘positive on outcome’ design, only cases with a (possibly partial) membership in the outcome are used for testing necessity, while tests for sufficiency are just carried out on the cases with a (perhaps partially) membership in the causal condition following the logic of the ‘positive on cause’ design.

Another important feature of set theoretic analysis is that it is compatible with the analysis of causal complexity – as already mentioned – by using the subset principle on multiple causal combinations. Furthermore, set-theoretic methods also permit the examination of cases as configurations as emphasized by the overall approach. This is usually accomplished through truth tables, which list the different logically possible combinations of conditions and the empirical evidence concerning each combination. Even further reduction of complexity is often achievable by an application of the minimization rule saying that if two Boolean expressions differ in only one causal condition yet produce the same outcome, then the causal condition that distinguishes the two expressions can be considered irrelevant and can be removed to create simpler, combined expressions (Ragin, 1987: 93).

As an extra notification for readers not familiar with crisp-set analysis, the binary language of Boolean algebra implies that a dichotomization of the outcome and explanatory factors in question is required. In addition, upper-case letters indicate the presence of an outcome or causal condition and lower-case letters indicate its absence, and concerning the interpretation of Boolean operators * means *and*, whereas + means *or*.

Fs/QCA

The basic idea behind fuzzy sets is to permit the scaling of membership scores and thus allow partial (fuzzy) membership in particular sets and thereby address the varying degree to which different cases belong to a set. Fuzzy sets combine qualitative and quantitative assessments since 1 and 0 are qualitative assignments (fully in and fully out, respectively), whereas values between 0 and 1 (non-inclusive) indicate degrees of membership. The value of 0.5 signals the cross-over point, that is, neither more in nor more out. Thus, a fuzzy set is a continuous set calibrated to indicate degree of membership. In this way, the membership scores of the cases are supposed to reflect the degrees to which a particular case is in or out of a set of (e.g.,) liberal regimes, where the membership of a case can vary fully out of to being fully in the set (Ragin, 2000: 154).

By using the subset principle, the fuzzy-set method enables the researcher to establish whether conditions should be regarded as necessary and/or sufficient. Adjusted to fuzzy sets, a condition, accordingly, is necessary for an outcome if its score is consistently higher than or equal

to the outcome.¹¹ In contrast, if the sufficiency criterion is adjusted to fuzzy sets, a condition is sufficient for an outcome if its score is consistently lower than or equal to the outcome.¹²

The veristic procedure¹³ outlined in connection to the assessment of necessity and sufficiency can be modified by introducing the terms quasi-necessity and quasi-sufficiency, which open up the possibility to take “troubling aspects of social data – error, chance, randomness, and other factors – into account” (Ragin, 2000: 109). Rather than imposing the absolute standards associated with a strict interpretation of the subset principle in an analysis, it is also possible to make inferences about necessity and sufficiency using more probabilistic methods in the evaluation of the data. This alternative procedure brings tests of consistency – the proportion of cases consistent with the argument being tested – into play. More specifically, it is possible to assess the quasi-necessity or quasi-sufficiency using linguistic qualifiers such as *usually* for a proportion of at least 0.65 (65%) and “almost always” for a proportion of at least 0.80 (80%). Such benchmark proportions then have to be linked with probabilistic criteria¹⁴ in order to assess whether, in relation to a particular condition, the number of cases fulfilling the subset principle is significantly greater than, say 0.80. If this is the case, then the causal condition in question might be labelled *almost always* necessary/sufficient for the outcome.

Recently, Charles Ragin (2005) has developed the truth table algorithm as an alternative to the inclusion algorithm presented in his introductory book on fuzzy-sets (2000). The working of the new algorithm has more in common with the crisp-set procedures for assessing subset relationships. The bridging attempt builds on (1) the direct correspondence between the rows of a crisp-set truth table and the corners of the vector space defined by fuzzy-set conditions; (2) the cases’ varying degree of membership in each corner of this vector space¹⁵ as well as (3) the consistency of the evidence for each causal combination with the argument that is a subset of the outcome (Ragin, 2005: 7-8). Apropos consistency, Ragin suggests the researcher to stay closer to the evidence by observing whether a substantial gap occurs in the upper ranges of the consistency scores and use this information to choose a cut-off value for determining which causal combinations are consistent with the subset principle instead of an a priori benchmark proportion. In general, the level of

¹¹ $Y_i \leq X_i \rightarrow$ the outcome is a subset of the condition and, given a plausible theoretical foundation, the condition thus should be regarded as necessary for the outcome.

¹² $X_i \leq Y_i \rightarrow$ the condition is a subset of the outcome and consequently, given a reasonable theoretical base, the condition should be regarded as sufficient for the outcome.

¹³ Not allowing any deviant cases.

¹⁴ Significance is assessed on the basis of a simple z test with the corresponding α -levels, usually: 0.01; 0.05 or 0.1.

¹⁵ Note that it is a significant property of combinations of fuzzy sets that a case only can have one membership score above 0.5 in the logically possible combinations formed from a given set of causal conditions.

consistency used as selection criterion should not be less than 0.75 and preferably exceed 0.85 because lesser values indicate substantial inconsistency. Moreover, an alternative to just calculating the raw proportion of consistent cases is to assess consistency more sensitively to the membership scores. The sum of consistent membership scores is used as the numerator, and the sum of all membership scores in the outcome is used as the denominator (Ragin, 2005: 10-11).¹⁶ While the first measure is used by the software in relation to the inclusion algorithm, the more sophisticated one is applied in relation to the truth table algorithm.

Another criterion to be considered is a number-of-cases threshold required to classify some combinations of conditions as relevant and others as remainders based on the number of cases with a membership above 0.5¹⁷ in each corner. When the number of cases is rather low, as in this study, the most reasonable frequency threshold is one case. Along these lines, the causal combinations with at least one case having a membership above 0.5 are kept for further analysis, whereas combinations of conditions short of any cases with more than a 0.5 membership are treated as remainders in the subsequent examination.

Similar to cs/QCA, upper-case letters indicate the presence of an outcome or a condition and lower-case letters indicate its negation. Negations in fs/QCA work in a slightly different way, though. Illustrating this point, Hungary is assessed the score 0.64 concerning the condition Early Developed (cf. the appendix), whereas this case receives the score 0.36 (1-64) in the set of not Early Developed (that is, early developed). Likewise, * still means *and*, whereas + means *or*, but in relation to fs/QCA, logical *and* is accomplished by taking the minimum membership score of each case in the sets that are intersected. Conversely, logical *or* is accomplished by taking the maximum membership score of each case in the sets that are intersected.

Transforming Data into Crisp-set and Fuzzy-set Membership Values

To facilitate the empirical examination using the crisp-set and fuzzy-set methods, appropriate empirical evidence has to be specified and, subsequently, the empirical evidence has to be translated into membership scores in the sets representing the outcome and the conditions (cf. Verkuilen, 2005), which also implies a corresponding terminological change (e.g., Wealthy instead of GDP/cap.). Doing this, the more or less established convention of coding the set memberships, so their presence (theoretically) contributes to the presence of the outcome, has been observed.

¹⁶ Formalized: $\text{Consistency} = \frac{\sum X_{i(\text{consistent values})}}{\sum X_{i(\text{all values})}}$, where $X_{i(\text{consistent values})}$ represents the consistent fuzzy membership value in the causal condition of the i^{th} case, whereas $X_{i(\text{all values})}$ is the sum of fuzzy membership values in the causal condition of all cases.

¹⁷ I.e., more in than out of the set.

The most important task in the translation to fuzzy membership values is to specify three important qualitative anchors, that is, the point at which full membership is reached, the point at which full non-membership is reached, and the point of maximum ambiguity in whether a country is more in or more out of the set in question. When specifying these qualitative anchors, the researcher has to offer an explicit rationale for each breakpoint (Ragin, 2000: 158). In this way, substantive and theoretical knowledge provide the means for calibrating data (cf. Ragin, 2000: 160).¹⁸ Note also that, for instance, the set of poor countries is not simply the inverse set of wealthy countries because close link between the operationalizations and the concepts often requires a selection of asymmetrical anchors (Ragin, 2000: 163-165).

The Civil Liberty Index is a useful starting point for assessing degree of membership in the set of democratic countries, but the operationalization does not stop here. The researcher also needs to establish qualitative anchors for the set of liberal regimes, i.e., breakpoints for separating the fully liberal regimes from the rather liberal, the rather democratic from the slightly liberal, and so on. These breakpoints then define the fuzzy set of democratic countries, the focus of the theoretical formulation (cf. Ragin, 2000: 161). It seems obvious that, in order to be regarded fully in the set of liberal regimes and correspondingly to be given a fuzzy-value of 1, a country has to score as high as possible. The cross-over value is chosen to be 65 because being more in than out of the set should be associated with a fulfilment of rather high demands and there is a natural gap in the case distribution. Likewise, a consideration for high demands and a natural gap between the scores of Uzbekistan and Turkmenistan on the one hand and Belarus on the other places the non-membership value at 15; meaning that Belarus only achieves an extremely low membership value.

The qualitative anchors of the condition wealthy have been established on the basis of a study examining the modernization thesis (Przeworski et al., 1996; Przeworski & Limongi, 1997). Accordingly, dictatorships survive (or succeed one another) almost invariably in countries with an annual per capita income of less than \$1000, and they are somewhat less stable in countries with incomes between \$1000 and \$4000 and even less so above this level. Hence, countries with a score below 1000 are deemed fully out of the set, whereas 4000 is chosen as the cross-over point. To be a full member in the set of wealthy countries, a case must score higher than 8000, which is the level of per capita income that more or less separates countries of high human development from the ones categorized as countries of medium human development by UNDP (2004: 140).

¹⁸ The threshold setter option in the TOSMANA software, which gives the opportunity the view the case distribution for each outcome and conditions, was another helpful tool in this process of distinction described below; in particular it ensures that the breakpoints discriminate and are not placed between near-by case scores.

Also in relation to the condition high education level, the thresholds are inspired by the same UNDP ranking. The breakpoints of non-membership and maximum ambiguity set to 60 and 85;¹⁹ scores approximately corresponding to the division between high, medium, and low human development (UNDP, 2004: 140). The upper anchor is identical to the maximum achievable value of 100.

Low agricultural employment is equalled with a rate of non-agricultural employment of 95; the average agricultural employment rate in the OECD countries being about 5 percent. Fully out of the set are countries, where more than half of the labour force works within agriculture such as Albania. The score equal to the cross-over point is set to 70; the midpoint between the highest and lowest empirical scores accidentally placed in a natural gap.

Similarly, a natural gap is found in the case distribution concerning independence of natural resources leading to the selection of a score of 90 as cross-over point. If more than 50 percent of the GDP is supplied by natural resources, a country is regarded as fully not-independent, and once more the upper anchor has been set to the maximum achievable value of 100.

Full fuzzy membership in the set of ethno-religious homogenous countries is achieved if a country scores is scoring 100 – the highest possible – whereas the cross-over point is set to 49 just above the median and below the midpoint of the hypothetically achievable scores implying that Belarus, Croatia, and Romania are slightly more in the set than out. Cases with a score lower than 15, that is, Bosnia-Herzegovina and Latvia, are considered fully out of the set.

Historically, the Czech republic does not belong fully in the set of early developed countries, so the full membership score is set to 45, whereas the cross-over point is decided to be 0.24 meaning that Slovakia and Croatia are slightly more in than of the set,²⁰ whereas the Caucasian and Central Asian countries are deemed fully out of the set by equalling a score of 15 or less with non-membership.

Table 2 presents a summary of the break points facilitating the translation into crisp and fuzzy values, where the thresholds used to make the data suitable for crisp-set analysis (through dichotomization) are equal to the cross-over points. Moreover, all the fuzzy values are assigned to the cases on the background of the qualitative anchors and relatively to their original scores. The attribution of values to the individual cases is publicized in the appendix, where also the raw data used in the statistical analyses is presented.

¹⁹ Moreover, the case distribution shows a natural gap between the scores 0.83 and 0.86.

²⁰ It would probably be more obvious to assign these two cases a fuzzy-value of 0.5, but the procedures connected to the truth table algorithm work best when this value is avoided (cf. Ragin, 2005: 14).

Table 2: Values Used in the Translation into Crisp and Fuzzy Membership Scores

	Full Membership (1)	Crossover Point (0.5)	No membership (0)
Liberal Regime	100	65	15
Wealthy	8000	4000	1000
High Education Level	100	85	60
Low Agricultural Employment	95	70	50
Independent of Natural Resources	100	90	50
Ethno-religious Homogeneous	100	49	15
Early Developed	45	24	15

Empirical Analysis

The conditions/independent variables related to the extent of civil liberty are tested by the use of three different types of software. The OLS-regression is run with SPSS 13.0, the fuzzy-set analysis with fs/QCA 1.4 developed by Charles Ragin, Kriss Drass, and Sean Davey, and the crisp-set analysis with TOSMANA 1.202 developed by Lasse Cronquist.²¹

Statistical Analysis

If only the bivariate relationships among the explanatory variables and civil liberty is examined using conventional statistical tools, there is substantial support for most of them. All variables but education have the expected direction, and ethno-religious diversity and education are the only ones insignificant at the 0.1 level.²² The bivariate correlation between civil liberty and early development ($r=0.81$) is very high, whereas the correlations between the dependent variable and GDP/cap., natural resources and agricultural employment are more moderate with correlations in the region of 0.47.²³ How strong these relationships are once controls are introduced is shown in table 3. Here the

²¹ The QCA software is free and downloadable from <http://www.u.arizona.edu/%7Ecragin/software.htm> and www.tosmana.net, respectively.

²² It is disputed, whether significance testing of non-samples is plausible, but Thomsen (1997) has argued rather convincingly in support of the procedure.

²³ Transformations of the variables using natural logarithm – as often done in relation to (e.g.,) wealth indicators because of expected marginal utility – did not improve any correlations importantly.

results of two cross-sectional regression models are presented; one just including the modernization indicators and the other constituting the full model.²⁴

The pure modernization model shows a high explanatory power, but the education variable displays an unexpected directional influence and agricultural employment seem not to have any significant effect on the amount of civil liberty when controlling for education and GDP/cap.

Table 3: OLS Estimation Results of Models with Civil Liberty as Dependent Variable

Model variable	Model 1	Model 2
Constant	361.503*** (85.706)	199.727*** (69.064)
GDP/cap.	0.010*** (0.003)	0.003 (0.003)
Education	-4.226*** (0.919)	-2.78*** (0.704)
Agricultural Employment (inv.)	0.198 (0.523)	0.367 (0.391)
Natural Resources (inv.)		0.087 (0.255)
Ethno-religious Diversity (inv.)		0.231* (0.131)
Early Development		2.083*** (0.466)
R ² Adjusted	0.55	0.78

Note: N is 28 for all models. Unstandardized coefficients reported with standards errors in parentheses.
*significant at the 0.1 level; **significant at the 0.05 level; ***significant at the 0.01 level.

An inclusion of the three remaining independent variables increases the variance explained from 55 % to 78 % and turns the wealth variable (GDP/cap.) insignificant, while education continues to have a significant influence of unanticipated direction. With regard to the extra variables included in model 2, all the coefficients are in the expected direction, but the natural resource factor does not attain statistical significance, and the measure for ethno-religious diversity is barely significant. Early development, on the other hand, is highly significant and exposes a great influence on the level of civil liberty.²⁵

²⁴ Civil Liberty = $a_1 + b_1(\text{GDP/cap.}) + b_2(\text{Education}) + b_3(\text{Agricultural Employment}_{\text{inverse}}) + b_4(\text{Natural Resources}_{\text{inverse}}) + b_5(\text{Ethno-religious Diversity}_{\text{inverse}}) + b_6(\text{Early Development}) + \varepsilon$.

²⁵ The tolerance level of all the regressors exceeds the critical rule-of-thumb level of 0.1 (actually the values are all higher than 0.2 occasionally emphasized as a more plausible criterion), so the results do not – rather surprisingly – seem to be affected by statistical problems caused by multicollinearity.

Crisp-set Analysis

After the identification and dichotomous coding of positive and negative cases and the factors believed to influence the outcome a crisp-set analysis proceeds by the constructing of a truth table. This is done through a regrouping all identical cases in terms of conditions into a single configuration and specify its outcome. If two or more cases belonging to the same configuration but have different outcomes, a C in the outcome column is indicating the presence of a contradiction. Configurations referring to logical cases (remainders)²⁶ with no empirical instances are not presented in the truth table below because in that case 50 more rows had to be filled in with different unobserved combinations of the conditions.²⁷

Table 4: Truth Table Representation of Crisp-set Data

Cases	Outcome	Wealthy	High Educational level	Low Agricultural Employment	Independent of Natural Resources	Ethno-religious Homogenous	Early Developed
Croatia, Lithuania, Poland	1	1	1	1	1	1	1
Czech Republic, Estonia, Hungary, Latvia, Slovakia, Slovenia	1	1	1	1	1	0	1
Albania	1 (0)	0	0	0	1	1	0
Mongolia	1 (0)	0	0	0	0	1	0
Bosnia-Herzegovina, Macedonia	C (0)	0	0	1	1	0	0
Armenia, Belarus, Bulgaria	0	1	1	1	1	1	0
Georgia, Serbia-Montenegro, Ukraine	0	1	1	1	1	0	0
Azerbaijan, Turkmenistan	0	1	1	0	0	1	0
Kazakhstan, Russia	0	1	1	1	0	0	0
Kyrgyzstan	0	0	1	0	1	0	0
Moldova	0	1	1	0	1	1	0
Romania	0	0	1	1	1	1	0
Tajikistan	0	0	1	0	0	0	0
Uzbekistan	0	0	1	0	1	1	0

²⁶ Remainders, logical cases and simplifying assumptions refer to the same phenomenon and are used interchangeably in this paper.

²⁷ The total number of possible configurations is 2^k , where k is the number of conditions.

The truth table reveals that the 28 cases have been reduced to 14 observed configurations. The grouping of countries makes analytical sense, but unfortunately a contradiction is discovered. Bosnia-Herzegovina and Macedonia have identical conditions but different outcomes. Thus, one or more procedures to solve this obstacle to further analysis have to be utilized. The available tools are (1) a replacement of conditions; (2) a replacement or exclusion of some of the cases; (3) a modification of the operationalization and/or dichotomization of the outcome; (4) a modification of the operationalization and/or dichotomization of the conditions; or (5) an addition of conditions. Considering these options, the third one is preferred in this situation. Even though the calibration of the civil liberty scores into membership in the crisp-set of liberal regimes was based on a rather high requirement, it is possible to undertake a theoretically plausible raise of the criterion. Instead of only demanding a liberal regime to score 65 on the Civil Liberty Index, the threshold is therefore placed, so a country has to be assigned a score of at least 80 to be in the set of liberal regimes. This choice solves the contradiction (see the new scores in parenthesis in the outcome column) and new contradictions do not evolve, so the next step of the analysis is to use Boolean algorithms to reduce the configurations into the simplest logical combinations of conditions associated with positive and negative outcome, respectively; both with and without the use of logical cases (Rihoux & Ragin, 2004: 10).

There are different ways to utilize logical cases (Ragin & Sonnett, 2004). One option is not to use them in the reduction and consequently end up with results not based on. Another option is to allow the inclusion of all logical cases in order to achieve the most parsimonious result. Finally, the researcher can evaluate the logical non-observed cases incorporated in a solution and chose to exclude some of them due to theoretical implausibility. The result obtained for positive outcome not including any such simplifying assumptions is: $ED*WE*LA*IN*HE \rightarrow LR^{28}$, i.e., a liberal regime is present in the post-communist region, when the country is early developed, wealthy, independent of natural resources, has a low agricultural employment rate as well as highly educated population. All the conditions in the reduced expression reveal the expected direction. Furthermore, the joint presence of all explanatory conditions – a part from ethno-religious homogeneity – is sufficient for the presence of a liberal regime and because only one term, i.e., path to the outcome, was found, all the conditions incorporated in the expression seems to be necessary.

Due to limited observed diversity, however, this result is not very parsimonious. In contrast, the minimized solution for positive outcome with simplifying assumptions is extremely

²⁸ LR=Liberal Regime; ED=Early Developed; WE=Wealthy; LA=Low Agricultural Employment; IN=Independent of Natural Resources; HE=High Education Level; EH=Ethno-religious Homogenous.

parsimonious, namely: $ED \rightarrow LR$, meaning that early developed is both a necessary and sufficient condition concerning liberal regimes in the post-communist setting. To reach this reduced expression, the software used 30 logical cases, which is quite many; a consequence of the large conditions/cases ratio as well as the limited diversity among the cases.

Attributable to the (potential) lack of symmetry in the cases revealing positive and negative outcome,²⁹ a supplementary test of a model with not liberal regime as outcome and including the same conditions is run. The minimized expressions found without simplifying assumptions are: $ed*HE*EH*IN$ (Armenia, Belarus, Bulgaria, Moldova, Romania, Uzbekistan) + $ed*we*he*EH*la$ (Albania, Mongolia) + $ed*WE*HE*EH*la$ (Azerbaijan, Turkmenistan, Moldova) + $ed*WE*HE*eh*LA$ (Georgia, Serbia-Montenegro, Ukraine, Kazakhstan, Russia) + $ed*we*HE*eh*la$ (Kyrgyzstan, Tajikistan) + $ed*we*he*eh*LA*IN$ (Bosnia-Herzegovina, Macedonia) $\rightarrow lr$. Overall, not early developed is pointed out as a necessary condition (present in all terms), whereas the rest of the expression is far more complex than for positive outcome consisting of six paths defined by four to six conditions each. On the other hand, it is positive that Moldova is the only case being over-determined, that is, explained by more than one path. A thorough substantial interpretation of the term(s) – going forward and back between cases, theories and results – would be the natural way to proceed at this stage of the analysis, but in order not to expand the paper to much³⁰ and to keep a methodological focus, we move directly to the minimized expression for negative outcome with simplifying assumptions: $ed \rightarrow lr$. Once again not early developed is identified as a necessary condition, but the inclusion of 20 remainders³¹ in the reduction furthermore leads to the result that it is also sufficient.

A successful conclusion of a Boolean minimization process requires a check for contradictory simplifying assumptions. The researcher has to make sure that the same logical case is not yielding different outcomes to minimize configurations (Rihoux & Ragin, 2004: 10). Obviously, there are none in this situation because a (logical) case cannot be both in and out of the set of early development at the same time.³² A next step in the crisp-set analysis could be an evaluation of the theoretical plausibility of the included remainders, maybe leading to an exclusion of some of them. Another could be to check the results' robustness by running replications of the tests after having

²⁹ Accordingly, it is not advisable to use de Morgans Law to obtain the solution of negative outcome on the basis of the solution for the positive outcome as suggested by Ragin (1987: 98-99).

³⁰ For the same reasons, the substantial evaluations of all the other results presented in this paper are also rather poor.

³¹ In this way, all possible configurations – observed (14) as well as unobserved (30+20) – have been used by the software to achieve the most parsimonious solutions.

³² To find out whether there are any such contradictions, the researcher has to make sure that the intersection of the results for the positive outcome and the negative outcome is a null set.

introduced some modifications to the model or data similar to the procedures presented above to solve contradictions, but instead I move right to the fuzzy-set analysis.

Fuzzy-set Analysis

When testing the necessity of the conditions with the fuzzy-set method, the membership values in the set of liberal regimes have to be consistently lower than or equal to the membership values associated with linked to the sets of the respective conditions. A total number of 12 conditions – the individual conditions in both their original and negated versions – are tested for necessity in relation to both positive and negative outcome. Unfortunately, the software is not able to test for necessity using the refined consistency measure, so the original one, measuring the raw proportion of consistent cases out of the all the cases, is used. Moreover, a fulfilment of the consistency criterion is equalled to a benchmark proportion of 0.80 and a significance level of 0.1. The test results show that none of the tested conditions are necessary for the presence of a liberal regime, whereas not early developed is almost always necessary for the presence of not liberal regimes.³³

Concerning sufficiency, the membership scores in the set of liberal regimes have to be consistently higher than or equal to the membership scores of the observed configurations; each covering cases with a membership above 0.5 in one of the 64 different corners of the vector space. The Truth Table resulting from such (crisp) coding of the conditions is contained within table 5 together with the (crisp) outcome value and the level of consistency; the evidence on which the outcome value is based. Because the number of cases included in this study is relatively small, the frequency threshold is selected to be 1, that is, one case revealing a particular combination of conditions is enough to consider it relevant. A closer look at the consistency column reveals a large drop in consistency from 0.95 to 0.80. This gap provides an easy basis for differentiating the consistent configurations from the inconsistent. Consequently, 0.95 is chosen to be the cut-off value and only the two first configurations are assessed a positive outcome value.

The subsequent reduction without logical cases reaches the result that a membership in the set of liberal regimes is facilitated by a combination of the conditions early developed, wealthy, low agricultural employment, independence of natural resources, and high education level; in short: ED*WE*LA*IN*HE→LR. All the factors included in the combined condition expose the expected direction and the only one not contributing to the explanation is ethno-religious homogeneity.

³³ Calculations by hand show that the refined consistency score of this condition is 98.7 – certainly high enough to be included in the reduced expression.

Table 5: Truth Table Representation of Fuzzy-Set Data (Positive Outcome)

Wealthy	High Educational level	Low Agricultural Employment	Independent of Natural Resources	Ethno-religious Homogenous	Early Developed	Outcome (Liberal Regime)	Consistency
1	1	1	1	0	1	1	0.96
1	1	1	1	1	1	1	0.95
0	0	1	1	0	0	0	0.80
0	0	0	1	1	0	0	0.80
1	1	0	1	1	0	0	0.77
0	1	1	1	1	0	0	0.77
0	1	0	1	1	0	0	0.76
0	1	0	1	0	0	0	0.75
1	1	1	1	0	0	0	0.75
1	1	1	1	1	0	0	0.74
0	0	0	0	1	0	0	0.70
1	1	1	0	0	0	0	0.66
1	1	0	0	1	0	0	0.62
0	1	0	0	0	0	0	0.60

The result is similar to the corresponding crisp-set analysis even though invariable symmetry between the findings is not the rule and despite the contradiction induced revision of the outcome's coding in relation to the crisp-set analysis. But, of course, if the truth table constructed during the fuzzy-set analysis in connection to the use of the truth table algorithm, looks exactly the same as the one for the crisp-set analysis, the results will not diverge.

The solution achieved after the inclusion of simplifying assumptions is also parallel to the one obtained through crisp-set analysis using remainders, namely: $ED \rightarrow LR$. Note, however, that these expressions have to be interpreted differently due to different standards of set-theoretic consistency (more about this later) and because, regarding fuzzy-set analysis, the expressions just commented on just concern sufficiency, whereas tests for necessity are done separately (see above). Therefore, necessity cannot be assessed on the background of these (sufficient) expressions, as it was the case in relation to the crisp-set analysis. Table 6 displays the membership scores of each case in the outcome – liberal regime – and the expressions connected to the analyses with and without remainders, respectively.

Concerning the consistency of the sufficient conditions with the subset principle, both expressions exhibit a consistency of 97 %. A membership value in the solutions exceeding the value of the outcome is provided by the case of Belarus, i.e. this case to some extent disconfirms the set-theoretic relationship discovered because it has a lower membership in the set of liberal regimes than predicted by the terms. The consistency is still very high though, because of the overall limited incongruence.

As indicated by the figures listed in table 6, the respect for civil liberty in several of the cases, such as Albania, Macedonia, and Mongolia, is not explained adequately indicating that other factors may be of relevance. An extraordinary commitment on civil liberty by some of these countries to facilitate access to or association with the EU could explain some of these divergences from the dominant patterns. Such an explanation, however, has to be verified by the use of in-depth case studies in order to steer clear of endogeneity problems (cf. King et al., 1994: 185-196).

Table 6: Membership Scores of Cases in Sufficient Paths (Positive Outcome)

	Liberal Regime	ED*WE*LA*IN*HE	ED
Estonia	1.00	0.64	0.64
Czech Republic	0.91	0.64	0.88
Hungary	0.86	0.61	0.64
Lithuania	0.86	0.64	0.64
Poland	0.86	0.55	0.64
Slovenia	0.86	0.62	0.64
Slovakia	0.77	0.52	0.52
Croatia	0.74	0.52	0.52
Latvia	0.71	0.61	0.64
Macedonia	0.63	0.28	0.28
Mongolia	0.63	0.00	0.00
Albania	0.51	0.00	0.28
Bulgaria	0.45	0.28	0.28
Moldova	0.45	0.28	0.28
Romania	0.45	0.28	0.28
Bosnia-Herzegovina	0.39	0.28	0.28
Serbia-Montenegro	0.39	0.28	0.28
Georgia	0.35	0.00	0.00
Ukraine	0.33	0.28	0.28
Armenia	0.29	0.00	0.00
Russia	0.29	0.28	0.28
Kazakhstan	0.17	0.00	0.00
Kyrgyzstan	0.17	0.00	0.00
Azerbaijan	0.15	0.00	0.00
Tajikistan	0.09	0.00	0.00
Belarus	0.03	0.28	0.28
Turkmenistan	0.00	0.00	0.00
Uzbekistan	0.00	0.00	0.00
Consistency		97 %	97 %
Coverage		57 %	62 %

Note: Inconsistent values emphasized.

Even though the extent of membership in the set of liberal regimes is rather underdetermined for some cases, the coverage, i.e., the percentage of the outcome explained by the causal conditions (Ragin, 2003),³⁴ is still 57 % for the joint conditions and 62 % for the more parsimonious term. In contrast to crisp-set solutions that always provide a full explanation of all cases, fuzzy-set analyses leave room for unexplained variation. The coverage measure is actually quite comparable to the level of explained variance, such as R^2 , used in ordinary statistics.

In the subsequent attempt to explain the negative outcome, the frequency threshold of 1 is maintained. An examination of the consistency scores identifies 0.90 (see table 7) as useful point for establishing a threshold well above the recommended level of 0.85. Thus, the four last configurations are assessed a positive outcome value.³⁵

Table 7: Truth Table Representation of Fuzzy-set Data (Negative Outcome)

Wealthy	High Educational level	Low Agricultural Employment	Independent of Natural Resources	Ethno-religious Homogenous	Early Developed	Outcome (Not Liberal Regime)	Consistency
0	1	0	1	0	0	1	0.99
0	1	0	0	0	0	1	0.99
0	0	1	1	0	0	1	0.96
0	1	1	1	1	0	1	0.95
0	1	0	1	1	0	1	0.95
1	1	1	0	0	0	1	0.94
1	1	0	0	1	0	1	0.94
0	0	0	1	1	0	1	0.94
0	0	0	0	1	0	1	0.93
1	1	0	1	1	0	1	0.90
1	1	1	1	0	0	0	0.84
1	1	1	1	1	0	0	0.80
1	1	1	1	0	1	0	0.57
1	1	1	1	1	1	0	0.57

³⁴ Formalized: $Coverage = \sum X_{i(\text{consistent})} / \sum Y_{i(\text{all})}$, where $X_{i(\text{consistent})}$ represents the consistent fuzzy membership value in the causal condition of the i^{th} case, whereas $Y_{i(\text{all})}$ is the sum of fuzzy membership values in the outcome of all cases.

³⁵ Membership in the set of not liberal regimes.

In contrast to the truth table generated in connection to positive outcome, the one constructed for negative outcome is not completely similar to the truth table associated with the crisp-set analysis; a consequence of selecting 0.90 as the minimal level of consistency acceptable. If the point of 0.80 was chosen instead, the divergence would not appear.

The logical reduction of the configurations with a positive outcome without using any remainders leads to the conclusion that none of the factors forms a sufficient explanation in itself since all the paths consist of more than one factor (see table 8). The expression, on the other hand, is in correspondence with the previous finding that not early developed is a necessary condition as all the terms include this condition. The coverage levels of the separate paths are rather high and the overall coverage of the whole expression is about 66 %, which indicates that the examined factors appear to be highly relevant for explaining in post-communist countries.

Table 8: Membership Scores of Cases in Sufficient Paths (Negative Outcome)

	Not Liberal Regime	ed*we*HE*la*eh	ed*we*he*la*EH	ed*WE*HE*la*EH	ed*we*HE*IN*EH	ed*we*he*LA*IN*eh	ed*WE*HE*LA*in*eh
Turkmenistan	1.00	0.43	0.16	0.53	0.23	0.16	0.34
Uzbekistan	1.00	0.43	0.32	0.29	0.57	0.32	0.29
Belarus	0.97	0.12	0.12	0.26	0.12	0.12	0.21
Tajikistan	0.91	0.58	0.37	0.34	0.00	0.00	0.27
Azerbaijan	0.85	0.25	0.39	0.51	0.42	0.25	0.25
Kazakhstan	0.83	0.32	0.06	0.06	0.06	0.32	0.56
Kyrgyzstan	0.83	0.52	0.33	0.33	0.33	0.37	0.29
Armenia	0.71	0.23	0.23	0.23	0.31	0.25	0.19
Russia	0.71	0.03	0.03	0.15	0.03	0.03	0.52
Ukraine	0.67	0.27	0.27	0.27	0.29	0.29	0.18
Georgia	0.65	0.30	0.24	0.24	0.24	0.30	0.09
Bosnia-Herzegovina	0.61	0.09	0.00	0.00	0.00	0.54	0.07
Serbia-Montenegro	0.61	0.43	0.15	0.15	0.15	0.34	0.12
Bulgaria	0.55	0.18	0.18	0.18	0.37	0.37	0.37
Moldova	0.55	0.31	0.39	0.52	0.42	0.31	0.02
Romania	0.55	0.40	0.40	0.40	0.51	0.47	0.11
Albania	0.49	0.33	0.63	0.07	0.33	0.00	0.00
Macedonia	0.37	0.29	0.29	0.29	0.33	0.55	0.14
Mongolia	0.37	0.18	0.57	0.18	0.26	0.18	0.18
Latvia	0.29	0.00	0.00	0.00	0.00	0.00	0.04
Croatia	0.26	0.18	0.18	0.18	0.23	0.23	0.12
Slovakia	0.23	0.05	0.05	0.12	0.05	0.05	0.19
Hungary	0.14	0.15	0.15	0.21	0.15	0.15	0.12
Lithuania	0.14	0.20	0.20	0.24	0.20	0.20	0.25
Poland	0.14	0.12	0.26	0.36	0.36	0.12	0.10
Slovenia	0.14	0.00	0.00	0.00	0.00	0.00	0.09
Czech Republic	0.09	0.00	0.00	0.10	0.00	0.00	0.12
Estonia	0.00	0.00	0.00	0.17	0.00	0.00	0.18
Consistency	89 %	99 %	91 %	91 %	95 %	96 %	94 %
Coverage	66 %	43 %	37 %	40 %	39 %	39 %	35 %
Unique Coverage		3 %	2 %	2 %	2 %	3 %	6 %

Note: Expression without using simplifying assumptions. Inconsistent values emphasized.

The countries, however, seem to share a large extent of membership in the different outcome fostering contexts, that is, the paths encompass the same cases. Illustrating this point, Bulgaria's position is explained equally well by the three last causal conditions presented in the table. Hence, the unique coverage, i.e., the coverage uniquely attributed to a context controlling for the coverage of the other contexts³⁶ becomes particularly interesting. The unique coverage of the individual paths is also displayed in table 8. The low percentages of partitioned explanation confirm the impression that empirically the sufficient conditions are quite indistinguishable. In other words, the countries share membership values to a very high extent in several paths implying that the partitioned coverage provided by the individual terms becomes quite small. Nevertheless, there are some differences. The term $ed*we*HE*la*eh$, for example, provides the better explanations of Kyrgyzstan, Serbia-Montenegro, and Tajikistan.

Six paths constituted by five to six factors were included in the result only based on the observed evidence. In contrast, the minimized solution for negative outcome using logical cases so as to account for the limited diversity is far more parsimonious, namely: $we + la + in \rightarrow lr$, meaning that not wealthy, not low agricultural employment rate as well as not independent of natural resources are individually sufficient explanations. This result, though, is not in accordance with the result obtained through the separate control for necessity, so in order to include this factor in the final expression in a proper way, the set of not early developed is combined each of the terms in the expression through the fuzzy *and* procedure. This action increases the consistency of single paths and the expression slightly, but does not harm the high levels of coverage (overall 74 %) because the only values reduced through the procedure were, and remain, inconsistent.

The combination of not being early developed and not being wealthy seems to be the path with the most overall and individual explanatory power, but also the two other civil liberty impeding contexts reveal fairly high levels of overall coverage. Once again it is rather difficult to discriminate between the paths on the background of the case memberships. Nevertheless, some cases show significantly greater relationship with only one of the causal conditions. The condition of being not early developed and not independent of natural resources is the best explanation of missing respect for civil liberty in Turkmenistan, Russia, and Azerbaijan, whereas Belarus, Georgia, and Moldova are better covered by the path indicating a lack of early development in association

³⁶ Formalized: $Unique\ coverage = \sum X_{i(\text{unique consistent contribution})} / \sum Y_{i(\text{all})}$, where $X_{i(\text{unique consistent contribution})}$ represents the fuzzy membership value in the causal condition of the i^{th} consistent case that is uniquely contributed by this condition, whereas $Y_{i(\text{all})}$ is the sum of fuzzy membership values in the outcome of all cases.

with low non-agricultural employment than the others. Finally, an inspection of table 9 shows that Armenia, Bosnia-Herzegovina, Kyrgyzstan, and Uzbekistan are the best instances of the factor combination of not early developed and not wealthy.

Table 9: Membership Scores of Cases in Sufficient Paths (Negative Outcome)

	Not Liberal Regime	ed*we	ed*la	ed*in
Turkmenistan	1.00	0.47	0.66	0.77
Uzbekistan	1.00	0.71	0.58	0.30
Belarus	0.97	0.12	0.26	0.21
Tajikistan	0.91	0.66	0.73	1.00
Azerbaijan	0.85	0.42	0.51	0.54
Kazakhstan	0.83	0.36	0.32	0.56
Kyrgyzstan	0.83	0.64	0.52	0.29
Armenia	0.71	0.31	0.23	0.19
Russia	0.71	0.03	0.16	0.52
Ukraine	0.67	0.29	0.27	0.18
Georgia	0.65	0.30	0.39	0.09
Bosnia-Herzegovina	0.61	0.60	0.09	0.07
Serbia-Montenegro	0.61	0.43	0.45	0.12
Bulgaria	0.55	0.37	0.18	0.42
Romania	0.55	0.59	0.40	0.11
Moldova	0.55	0.42	0.52	0.02
Albania	0.49	0.72	0.72	0.05
Macedonia	0.37	0.60	0.29	0.14
Mongolia	0.37	0.82	0.57	0.64
Latvia	0.29	0.00	0.20	0.04
Croatia	0.26	0.23	0.18	0.12
Slovakia	0.23	0.05	0.12	0.19
Hungary	0.14	0.15	0.21	0.12
Lithuania	0.14	0.20	0.24	0.35
Poland	0.14	0.36	0.36	0.10
Slovenia	0.14	0.00	0.00	0.09
Czech Republic	0.09	0.00	0.10	0.12
Estonia	0.00	0.00	0.17	0.18
Consistency	85 %	92 %	89 %	90 %
Coverage	74 %	59 %	58 %	46 %
Unique Coverage		8 %	3 %	7 %

Note: Expression reached by the inclusion of simplifying assumptions. Inconsistent values emphasized.

Similar to the crisp-set analysis, a natural next step in a fuzzy-set analysis could be to evaluate the theoretical plausibility of the logical cases and/or a control of the robustness of obtained solutions. A part from the options mentioned in connection to the crisp-set analysis, a further opportunity is to examine several different thresholds and assess the consequences of increasing and decreasing the consistency cut-off value (Ragin, 2005: 15).

Conclusion

Three different methodological tools were employed to explore the relationship among structural explanations of the dissimilar respect for civil liberties in the post-communist countries. In general,

all three methods led to findings that are quite plausible from a theoretical point of view. A notable exception was the result reached by the OLS-regression that education should have a negative effect on the degree of civil liberty. Moreover, it was not fully clear how to make sense out of some of the paths discovered by the crisp-set and fuzzy-set analyses attempting to explain negative outcome without the use of remainders because of the number of factors combined and their occasional surprising directions. On the other hand, the grouping of cases into configurations and paths was theoretically meaningful.

It is hard to estimate to what extent the results are parallel to those provided by previous studies; first of all because of the lack of consensus in the theoretical and empirical literature concerning this and related topics and, secondly, because the findings of the different methods diverge. Especially, noteworthy discrepancies were found between the results offered by the OLS-regression on the one hand and the QCA methods on the other; mainly owing to the different logics behind their reduction of complexity. Despite the differences, though, they agreed in emphasizing early development as a very important factor when it comes to the explanation of the (dis)respect for civil liberty in the examined countries.

The strict focus of the present study on structural explanations in a comparative perspective implies that the crucial relationship between these factors and the actors making history has not been assessed adequately. Therefore, the actual working of the logic presented in the theoretical setup still requires a confirmation by in-depth case studies. Nonetheless, the findings suggest that an exclusive focus on proximate conditions in the explanation of current political processes that do not take deeper conditions into account neglects some important knowledge.

When it comes to an appraisal of the methods applied, the QCA methods present promising means for comparative studies in the social sciences; especially in relation to systematic examinations of a midsize number of cases. They provide an interesting way to address relationships often ignored in traditional analyses, but it has also been emphasized that such methods are best viewed as an additional tool in the already existing tool collection instead of a replacement for it (Verkuilen, 2005: 492). Sometimes it is more fruitful to recognize the conventional statistical procedures and the QCA procedures as supplements to each other, whereas under other circumstances they are more fruitfully viewed as alternatives, where one of them is to be preferred. This choice, for instance, depends on whether the researcher is more interested in the causes of effects or the effects of causes, where the fuzzy-set method has been pointed out as more suitable for the first objective and statistics for the second (Katz et al., 2005: 569). More crucial,

however, are the different assumptions about causality (causal universes) underlying the diversity-oriented and variable-oriented approaches. Is the area under investigation best described by a general linear, additive logic, then conventional statistics such as OLS-regression is probably the most appropriate methodological tool, and if it is characterized by complex causality and sufficient and/or necessary explanations, the QCA methods have a strong standing because of their ability to handle set theoretical propositions. This underlines the importance of using methods able to deal with an alternative view of causation.

Finally, a comparison of the QCA methods signifies that the fuzzy-set method has some obvious advantages when the data material is not characterized by natural dichotomies. Firstly, its treatment of conceptual issues is more in accordance with verbal theory (cf. Lakoff, 1987). Secondly, it is not as sensitive to measurement error, chance, and randomness (Ragin, 2000: 109), and last, but not least, the possible loss of important information connected to the dichotomization procedure is avoided, while it is still requiring an informed choice about the assignment of values to the cases.

Appendix

Table 10: Data Used in OLS-Regressions

	Civil Liberty	GDP/cap.	Education	Agricultural Employment (inverse)	Natural Resources (inverse)	Ethno-religious Diversity (inverse)	Early Development
Albania	66	1400	76.33	45.1	98.97	62.50	20
Armenia	44	5530	91.87	83.5	96.16	75.00	10
Azerbaijan	30	4620	88.20	69.9	86.71	75.00	10
Belarus	18	7010	91.93	81.8	95.83	50.00	20
Bosnia-Herzegovina	54	3394	83.00	90.3	98.59	6.25	20
Bulgaria	60	5000	87.33	85.9	91.60	62.50	20
Croatia	82	6171	87.67	85.8	97.50	50.00	25
Czech Republic	94	8600	89.33	89.8	97.46	31.25	40
Estonia	100	8900	90.00	86.3	96.43	43.75	30
Georgia	50	5590	89.00	75.3	98.26	31.25	10
Hungary	90	6810	88.33	84.5	97.57	43.75	30
Kazakhstan	32	5130	90.33	78.8	85.11	18.75	10
Kyrgyzstan	32	3180	89.00	69.3	94.20	37.50	10
Latvia	80	8590	88.33	85.1	99.22	12.50	30
Lithuania	90	6430	89.33	83.0	92.93	75.00	30
Macedonia	74	3394	82.67	80.5	97.15	37.50	20
Moldova	60	4670	88.27	69.3	99.53	68.75	20
Mongolia	74	2100	72.87	67.2	78.42	81.25	10
Poland	90	5150	92.33	72.3	97.93	87.50	30
Romania	60	3470	86.00	75.0	97.71	50.00	20
Russia	44	7720	92.00	87.0	88.01	25.00	20
Serbia-Montenegro	54	4542	89.67	72.4	97.61	25.00	20
Slovakia	84	7600	90.00	89.0	96.18	37.50	25
Slovenia	90	9200	88.67	95.4	98.24	43.75	30
Tajikistan	24	3010	89.00	60.7	44.55	43.75	10
Turkmenistan	2	4230	95.33	63.6	68.16	56.25	10
Ukraine	48	5680	90.67	81.3	96.44	43.75	20
Uzbekistan	4	2740	90.33	66.6	93.96	56.25	10

Table 11: Summary of Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Civil Liberty	58.21	27.896	2	100
GDP/cap.	5352.18	2139.161	1400	9200
Education	88.14	4.625	72.87	95.33
Agricultural Employment (inverse)	77.67	11.051	45.10	95.40
Natural Resources (inverse)	92.16	11.689	44.55	99.53
Ethno-religious Diversity (inverse)	47.54	20.857	6.25	87.5
Early Development	20	8.498	10	40

Sources

Civil Liberty: Civil Liberty Index based on own coding of the Country Reports on Human Practices (1999-2003) provided by the US State Department

GDP/cap.: Data for 1989. Katchanovski (2000: 58).

Education: Education Index from UNDP Human Development Report 1998 (data for 1995). Data for Bosnia-Herzegovina from Human Development Report 2003. Score for Serbia-Montenegro calculated on the basis of data from Human Development Report 2004.

Agricultural Employment Rate: World Resource Institute (data for 1989, but 1993 for all countries formerly included in the Soviet Union and 1994 for the Czech Republic and Slovakia)

Natural Resources: World Bank Development Indicators (data for 1996, but Armenia 1997; Belarus 1998; Tajikistan 2000; Turkmenistan 1997. Estimate from CIA World Fact Book used in relation to Uzbekistan. Figures for Serbia-Montenegro and Bosnia-Herzegovina concern 1996 and 1998, respectively, and are calculated on the basis of data from the Commodity Yearbook provided by UNCTAD)

Early Development: Kitschelt (2001: 5-7). Own assessment of Bosnia-Herzegovina, Serbia-Montenegro, and Mongolia.

Table 12: Fuzzy-set and Crisp-set Memberships in the Outcome and Conditions

	Civil Liberty	Wealthy	High Educational level	Low Agricultural Employment	Independence of Natural resources	Ethno-religious Homogenous	Early Development
Albania	0.51 (1)	0.07 (0)	0.33 (0)	0.00 (0)	0.95 (1)	0.63 (1)	0.28 (0)
Armenia	0.29 (0)	0.69 (1)	0.73 (1)	0.77 (1)	0.81 (1)	0.75 (1)	0.00 (0)
Azerbaijan	0.15 (0)	0.58 (1)	0.61 (1)	0.49 (0)	0.46 (0)	0.75 (1)	0.00 (0)
Belarus	0.03 (0)	0.88 (1)	0.73 (1)	0.74 (1)	0.79 (1)	0.51 (1)	0.28 (0)
Bosnia-Herzegovina	0.39 (0)	0.40 (0)	0.46 (0)	0.91 (1)	0.93 (1)	0.00 (0)	0.28 (0)
Bulgaria	0.45 (0)	0.63 (1)	0.58 (1)	0.82 (1)	0.58 (1)	0.63 (1)	0.28 (0)
Croatia	0.74 (1)	0.77 (1)	0.59 (1)	0.82 (1)	0.88 (1)	0.51 (1)	0.52 (1)
Czech Republic	0.91 (1)	1.00 (1)	0.64 (1)	0.90 (1)	0.87 (1)	0.24 (0)	0.88 (1)
Estonia	1.00 (1)	1.00 (1)	0.67 (1)	0.83 (1)	0.82 (1)	0.42 (0)	0.64 (1)
Georgia	0.35 (0)	0.70 (1)	0.63 (1)	0.61 (1)	0.91 (1)	0.24 (0)	0.00 (0)
Hungary	0.86 (1)	0.85 (1)	0.61 (1)	0.79 (1)	0.88 (1)	0.42 (0)	0.64 (1)
Kazakhstan	0.17 (0)	0.64 (1)	0.68 (1)	0.68 (1)	0.44 (0)	0.06 (0)	0.00 (1)
Kyrgyzstan	0.17 (0)	0.36 (0)	0.63 (1)	0.48 (0)	0.71 (1)	0.33 (0)	0.00 (0)
Latvia	0.71 (1)	1.00 (1)	0.61 (1)	0.80 (1)	0.96 (1)	0.00 (0)	0.64 (1)
Lithuania	0.86 (1)	0.80 (1)	0.64 (1)	0.76 (1)	0.65 (1)	0.75 (1)	0.64 (1)
Macedonia	0.63 (1)	0.40 (0)	0.45 (0)	0.71 (1)	0.86 (1)	0.33 (0)	0.28 (0)
Moldova	0.45 (0)	0.58 (1)	0.61 (1)	0.48 (0)	0.98 (1)	0.69 (1)	0.28 (0)
Mongolia	0.63 (1)	0.18 (0)	0.26 (0)	0.43 (0)	0.36 (0)	0.82 (1)	0.00 (0)
Poland	0.86 (1)	0.64 (1)	0.74 (1)	0.55 (1)	0.90 (1)	0.88 (1)	0.64 (1)
Romania	0.45 (0)	0.41 (0)	0.53 (1)	0.60 (1)	0.89 (1)	0.51 (1)	0.28 (0)
Russia	0.29 (0)	0.97 (1)	0.73 (1)	0.84 (1)	0.48 (0)	0.15 (0)	0.28 (0)
Serbia-Montenegro	0.39 (0)	0.57 (1)	0.66 (1)	0.55 (1)	0.88 (1)	0.15 (0)	0.28 (0)
Slovakia	0.77 (1)	0.95 (1)	0.67 (1)	0.88 (1)	0.81 (1)	0.33 (0)	0.52 (1)
Slovenia	0.86 (1)	1.00 (1)	0.62 (1)	1.00 (1)	0.91 (1)	0.42 (0)	0.64 (1)
Tajikistan	0.09 (0)	0.34 (0)	0.63 (1)	0.27 (0)	0.00 (0)	0.42 (0)	0.00 (0)
Turkmenistan	0.00 (0)	0.53 (1)	0.84 (1)	0.34 (0)	0.23 (0)	0.57 (1)	0.00 (0)
Ukraine	0.33 (0)	0.71 (1)	0.69 (1)	0.73 (1)	0.82 (1)	0.42 (1)	0.28 (0)
Uzbekistan	0.00 (0)	0.29 (0)	0.68 (1)	0.42 (0)	0.70 (1)	0.57 (1)	0.00 (0)

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