# Multiple pathways to success: Exploring the link between quality assurance and students' civic achievement by using Qualitative Comparative Analysis (QCA)

*Triin Lauri, Tallinn University, triin.lauri@tlu.ee*

*Anu Toots, Tallinn University, anuto@tlu.ee*

## Abstract

The importance of responsible citizen has risen in most countries. However, the variation of civic achievement across countries is substantial that raises the question on quality of teaching and learning. Current paper analyzes the complex causal link between high civic achievement and national quality assurance systems by using data of ICCS 2009 Teacher questionnaire and Encyclopedia. Thirty eight countries from Europe, Asia and Latin America with different approaches to teachers' professional development and students' assessment that form the core of the quality assurance have been selected. We assume that there are different configurations of quality assurance systems producing high civic achievement. By using fuzzy set Qualitative Comparative Analysis (fsQCA), we investigate in set theoretic notions these various pathways composed of five institutional features of national quality assurance systems. The analysis is conducted in two steps. Firstly, we determine the remote conditions of success, i.e. the outcome enabling conditions (Schneider & Wagemann 2006). Second step aims to define consistent solutions that illustrate the interplay between institutional features and the context in which these are embedded. We test, first, whether countries with different level of social and human development differ also in outcome enabling conditions? Second, whether 'national testing' is one of the necessary components in the sufficient configuration, which produces high civic achievement? And finally, we study the sufficient combinations of conditions under which countries demonstrate high civic achievement. QCA fuzzy set method adds a new insight into the analysis of large scale survey data by making use of qualitative data of study Encyclopedias. From the practical point of view study findings allow to improve national quality assurance systems in secondary education.

***Keywords:*** ICCS Encyclopedia, civic achievement, students' assessment, quality assurance, fuzzy set method

## Introduction

The importance of responsible citizen has risen in most countries. However, the variation of civic achievement across countries is substantial (Schulz, Ainley, Fraillon, Kerr, Losito, 2010). Typically, the explanations are sought among individual factors, education system and

country characteristics. These cross country disparities raise the question on efficiency of teaching and learning, often associated with quality assurance policy. In broad sense, quality of education has been high in political agenda and academic research (Furlong, Cochran-Smith, Brennan, 2009; Schleicher, 2012; Ozga, Dahler-Larsen, Segerholm, Simola, 2011). However, studies on quality assurance in some specific areas of education are still in their initial stage (Ingvarsson et al., 2012). There have been some attempts to explore the quality assurance policies and practices for democratic citizenship in Europe (Birzea, Cecchini, Harrison, Krek, Spajic-Vrkaš, 2005; Abs, 2009), but these studies have remain limited in scope and analytical challenge. Current paper aims to contribute to debate by analyzing the complex causal link between civic achievement and national quality assurance systems. More specifically we are interested to find out, which are the combinations of student assessment and teacher development policies that contribute to the high civic achievement. Because the quality assurance system is embedded into broader social context, we also investigate whether the level of social and human development has an effect on combination of factors that contribute to the educational success. The assumption is that in countries with established democratic traditions civic culture is important, whereas in emerging democracies sound formal regulations and enforcement mechanisms play a central role.

Besides using a novel topic in the citizenship education – quality assurance –, the method applied in current paper is also almost unexplored within this field. The IEA is one of the world leading research communities in large scale educational assessment. It strengths lies in rigorous standards and advanced methods of quantitative comparative analysis. However, today many researchers (Landmann & Robinson, 2009, Kenworthy & Hicks, 2008) claim that survey method alone cannot provide sufficient explanations of complex social phenomena and therefore need to be complemented by qualitative methods. These methodological aspirations find their expression in configurational comparative method introduced by Ragin (1987) and developed further by several schools (Rihoux & Ragin 2009; Schneider & Wagemann 2006; Schneider & Wagemann 2012). As response to these concerns IEA introduced encyclopedias to accompany its surveys. The main purpose of study encyclopedias is to provide in depth contextual information in order to interpret quantitative large scale survey data. However, IEA study encyclopedias are also a rich data source that allows to complement traditional quantitative analysis by qualitative inquires. For example, the ICCS Encyclopedia includes evidence on presence of quality assurance policy in this learning area in the majority of

participating countries (Ainley et al. 2013). Current paper attempts to demonstrate the new research possibilities by applying fsQCA method to the ICCS Encyclopedia data.

## Method & Data

FsQCA is a holistic approach based on the principles of set theory, formal logic and Boolean algebra, and oriented towards analyzing causal heterogeneity. All cases are treated as configurations of different conditions. Application of nonparametric configurational approach allows defining necessary and sufficient combinations of institutional features of quality assurance policies that bring about high civic achievement. Set theory implies also that different causal paths – each path and the role of each condition in this being relevant in a distinctive way – may lead to the same outcome (Ragin, Rihoux 2009). Causal complexity is effectively approached by making use of the notions of 'necessity and sufficiency'. A cause is defined as necessary if it must be present for a certain outcome to occur. A cause is defined as sufficient if by itself it can produce a certain outcome (Ragin 2008). Instead of speaking on independent and dependent variables QCA refers to conditions and outcome that build various configurations. In the current study, civic achievement is the outcome and characteristics of the national quality assurance systems are the conditions.

To allow for fuzzy-set qualitative comparative analysis, we need to calibrate the raw data (i.e. the characteristics of educational systems) into fuzzy-sets. Fuzzy-sets are membership scores of sets (conditions and outcome) that are purposefully calibrated using theoretical and external substantive knowledge and which indicate a degree of set-membership (Ragin 2008). This theoretically and empirically founded external knowledge should determine the qualitative breakpoints or thresholds, based on which we can determine the degree of membership of each set, i.e. conditions and outcome (see Appendix 1 and 2 for the calibration details). Based on the 'truth table' it is possible to define, which set of conditions systemically appears in the cases that have positive outcome (i.e. high civic achievement). For calibration and further fuzzy-set QCA analysis we used the open access software fsQCA 2.5.

Data for the analysis are taken from the ICCS 2009. The primary source is the ICCS Encyclopedia, which provides information on characteristics of national quality assurance systems based on the knowledge of domestic experts. We use five aspects to compose membership scores – status of the CCE in the curriculum, assessment of the students in CCE,

assessment of the schools in respect to the CCE, civic culture of the school, and teachers' specialization in the CCE.

Since one of the objectives of the study is to find out, whether remote conditions (i.e. level of societal and human development) play a role in ensuring high quality of citizenship education, we run the analysis with all 38 countries that participated in ICCS 2009. This allows distinguishing countries according to the level of human and socio-economic development. For this purpose we selected four internationally comparable indicators – Human Development Index, public expenditure on education, Gini index and voter turnout in last elections.

**The analysis**

Schneider & Wagemann (2012) suggest dividing conditions in comparative social research into remote and proximate factors. The former are exogenous, usually relatively stable, and their origin is often remote from the outcome. Proximate factors, by contrast, vary over time and can be modified by explicit actors. In first step, only the remote structural factors are analyzed. The result will be different combinations of contextual factors that contribute to the positive outcome. The second step consists of constructing truth tables for each outcome enabling contexts from step one and the proximate conditions, i.e. truth table is constructed for each (outcome enabling) context and the proximate conditions. The logical minimization of these tables yields the sufficient paths toward the outcome.

The conditions that explain the outcome are different for first and second step of analysis. Because of the deliberate exclusion of proximate factors that are expected to matter for the outcome, the analysis in step one is underspecified and the lower consistency thresholds might be considered in order to leave room for improvement once the proximate conditions are brought into the picture (Schneider, Wagemann 2012). In step two the consistency, the consistency threshold should be high.

The outcome, however, is the same in different steps of the analysis, and that is the high civic knowledge (HCK). Civic knowledge was defined broadly in ICCS as encompassing not only understanding but also knowing of concepts of citizenship as well as those of traditional civics. Thus, the ICCS assessment of civic knowledge covered content related to civic society and systems, civic principles, civic participation, and civic identities (Schulz et al. 2008). Civic knowledge was measured in the ICCS as a scale score based on 79-items (Shulz et al.

2010). In order to apply the ICCS civic knowledge scores to the fsQCA analysis we had to calibrate the outcome based on the result scores in ICCS 2009 and three qualitative thresholds to get the fuzzy scores for outcome to be included into analysis. These three thresholds are not mechanically derived from the proficiency levels in the ICCS, but chosen by authors according to their case specific and theoretical knowledge. This is argued (Ragin 2008) that fuzzy sets offer a middle path between quantitative and qualitative measurements, and calibration not only allows determining relative positions but also degree of membership, in our case the degree of membership in countries with high civic knowledge (HCK). The highest threshold (to be categorized as "full membership" HCK) includes countries with an average civic knowledge score above 540, the second threshold is 500 (the point of maximum indifference about membership versus no-membership, the 0.5 score), and the third threshold (the "full non-membership" of HCK) is set to 470 (see also Appendix 1 and 2 for calibration details). Countries that have the knowledge score above 500 are considered as the cases which show the positive outcome, i.e. are the members of high civic knowledge (HCK) countries set.

*First step –analyzing remote conditions to high civic knowledge*

Remote contexts that positively effect the outcome are labeled as 'outcome-enabling conditions' (Schneider & Wagemann 2006). We selected following conditions to perform the analysis of remote conditions - Human Development Index (HDI), Income disparities measured by Gini Coefficient (G), Public Expenditure on Education (E), Voter Turnout at Last Legislative Election (V).

We first identify the necessary and then the sufficient (combinations of) conditions that contribute to the positive outcome as recommended by Schneider and Wagemann (2010). The analysis of necessity means identifying the conditions which occur always when the outcome (high civic knowledge) is present. We analyze each condition separately and also the negations of all conditions. The recommended threshold for necessity is higher than 0.75, ideally above 0.9 (Schneider & Wagemann 2010). As results indicate (Table 1) there is no condition reaching the ideal level of necessity, although the HDI is very close to this.

**Table 1: Necessary remote conditions for high civic knowledge (HCK)**

| Condition | consistency | coverage |
|---|---|---|
| the degree of belongig to the high HDI countries (HDI) | 0.89 | 0.74 |
| the tendency to invest much on education (E) | 0.56 | 0.76 |
| the degree of belongig to the equitable countries (acc. to Gini) (G) | 0.69 | 0.75 |
| the considerable activity of voting (VT) | 0.59 | 0.56 |
| ~the degree of belongig to the high HDI countries (~HDI) | 0.23 | 0.34 |
| ~the tendency to invest much on education (~E) | 0.57 | 0.5 |
| ~the degree of belongig to the equitable countries (acc. to Gini) (~G) | 0.47 | 0.49 |
| ~the considerable activity of voting (~VT) | 0.54 | 0.65 |

*Notes: ~ indicates the negation, i.e. the absence of condition. Consistency is the degree of of sub-set relationship of necessity. Coverage is the proportion of memebership in the outcome explained by the solution (Ragin, 2008)*

A scatter-plot of the outcome and HDI as a condition (Figure 1) shows that Russian Federation and Chinese Taipei are the only cases, which contradicts the necessary condition's argument – (outcome is present while the condition is absent). Thus, we may conclude that a remote condition 'HDI' is with some reservations necessary for a country to produce high civic knowledge.

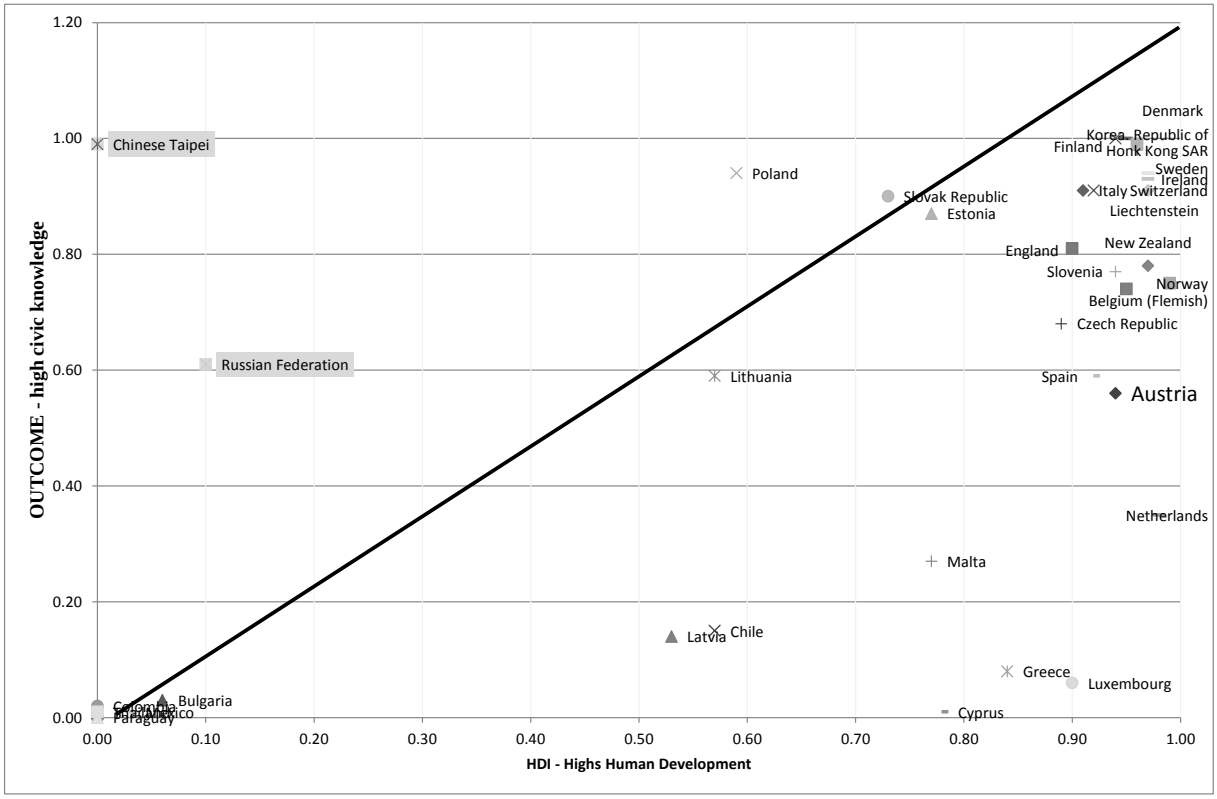


**Figure 1. HDI as necessary condition for high civic achievement**

Next we conduct the sufficiency analysis using a truth table to test whether different paths to high civic knowledge (HCK) exist in established and emerging democracies. We are looking for the combinations of the remote conditions, which contribute to the outcome (HCK). This means that we examine cases with the same causal conditions to see if they also share the

same outcome. The main steps of this part of fuzzy set analysis are: (1) making the truth table, i.e. transforming fuzzy set membership scores into combinations of causal conditions; (2) determining frequency threshold, i.e. establishing a rule for determine which combinations of conditions are relevant; (3) determining consistency threshold (significance in quantitative approach); i.e. the degree of the validity of the argument that given combination of conditions is sufficient for outcome to occur (0.75 is suggested minimum level by Ragin (2008), we used 0.8 in all of our sufficiency analysis); (4) using Boolean minimization to reduce complex expressions into a shorter formulas. The 'truth table' of remote conditions' analysis is provided in Table 2.

**Table 2. Truth table to investigate the outcome enabling configurations of remote condition**

| HDI | E | G | VT | number | HCK (Outcome) | consistency | cases |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 0 | 2 | 1 | 0.95 | Switzerland, Slovenia |
| 1 | 0 | 1 | 0 | 3 | 1 | 0.94 | Korea, Russian, Czhech |
| 1 | 0 | 0 | 0 | 3 | 1 | 0.90 | Hong-Kong, Lithuania, Poland |
| 1 | 1 | 0 | 0 | 1 | 1 | 0.90 | England |
| 1 | 1 | 1 | 1 | 6 | 1 | 0.84 | Sweden, Norway, Netherlands, Denmark, Belgium, Austria |
| 1 | 1 | 0 | 1 | 1 | 1 | 0.84 | New Zealand |
| 1 | 0 | 0 | 1 | 5 | 0 | 0.71 | Spain, Italy, Ireland, Greece, Chile |
| 0 | 0 | 1 | 0 | 1 | 0 | 0.70 | Bulgaria |
| 0 | 0 | 0 | 1 | 3 | 0 | 0.44 | Thailand, Paraguay, Indonesia |
| 0 | 0 | 0 | 0 | 5 | 0 | 0.42 | Russian, Mexico, Guatemala, Dominikan, Colombia |

*HDI – Human Development Index; E – public educational expenditure, G – Gini Index; VT – Voters Turnover; HCK – high civic knowledge (ICCS 2009)

The analysis reveals that there are different configurations of remote conditions to produce the high civic knowledge (Table 3). From the analysis of necessary conditions we know that 'HDI' is with certain reservations necessary for outcome to occur. Yet, by adding sufficient conditions one can see that in the group of so called emerging democracy countries 'HDI' should be in combination with '~VT' (the member of "non-high voter turnout"-countries), but in group of so called established democracy countries with 'E' (educational expenditures). Thus, the first step of analysis proves our hypothesis that different conditions contribute to the outcome in established and emerging countries.

**Table 3. Outcome enabling configurations**

| Outcome enabling formul | EMERGING DEMOCRACIES HDI*~VT | ESTABLISHED DEMOCRACIES HDI*E |
|---|---|---|
| Cases | Switzerland (0.97,0.91), Honk Kong SAR (0.96,0.98), Korea. Republic of (0.96,0.99), Slovak Republic (0.73,0.9), England (0.67,0.81), Estonia (0.65,0.87), Slovenia (0.59,0.77), Poland (0.59,0.94), Lithuania (0.57,0.59), Latvia (0.53,0.14), Czech Republic (0.52,0.68) | Norway (0.99, 0.75), Sweden (0.97,0.94), New Zealand (0.96,0.78), Belgium (Flemish) (0.95,0.74), Denmark (0.95,1), Finland (0.92,1), England (0.84,0.81), Netherlands (0.8,0.35), Cyprus (0.78,0.01), Austria (0.75,0.56), Switzerland (0.69,0.91), Slovenia (0.63,0.77) |
| Number of cases | 11 | 12 |
| Coverage | 0.45 | 0.55 |
| Consistency | 0.94 | 0.81 |

Solution coverage: 0.75
Solution consistency: 0.85

*Second step –analyzing proximate conditions to high civic knowledge*

The second step of analysis aims obtaining consistent solutions that illustrate the interplay between different institutional features and the context in which they are embedded. In result we can see certain paths as combinations of proximate factors within different remote contexts that jointly lead to the outcome.

Based on the ICCS Encyclopedia we identified proximate (institutional) conditions relevant in having a high civic achievement in the country. These five conditions to be included into analysis are - status of civic and citizenship education (CCE), assessment of students in relation to CCE, evaluation of schools in relation to CCE, national approaches to civic activities and involvement in schools (i.e. civic culture), and specialization of teachers in CCE. In some conditions there is a bigger variety among countries than in others. For example, just about half of the countries reported assessing students in civic and citizenship. A similar number said they evaluate schools with respect to this area of education (Ainley et al. 2013: 57). In terms of teachers specialization the picture is much more uniform. In 35 countries out of 38 CCE is taught by teachers of related subjects (Ainley et al. 2013: 53). Based on the country specific information, membership scores were calculated to create a truth table (see Appendix 2 for details).

As in case of the first step we start with the analysis of necessary conditions. Although there is no conditions, which meet the high consistency criteria (0.9) set for necessary conditions different paths to success in civic education can be seen in different countries (Table 4). In the group of emerging democracies the importance of the status of CCE as a separate subject, the

assessment of students and the evaluation of schools are important, while in group of established democracies, the specific status of CCE is not important, rather the civic culture in schools have a role in success. Thus, our second hypothesis, according to which the assessment of students is a necessary condition for producing success in civic knowledge turned to be invalid. However, within the group of emerging democracies it is close to satisfactory level of necessary condition.

To cast a deeper look into this causal mechanism we continue with the sufficiency analysis by using the truth table approach. Thus we are after the combinations of conditions which contribute to the outcome. Latter means that we seek for the sufficient institutional features of educational systems' to produce high civic knowledge. We conduct the truth table analysis in each "outcome enabling context" (investigated within the first step of analysis) separately.

**Table 4. Necessary PROXIMATE conditions for high civic knowledge**

| **EMERGING DEMOCRACIES, i.e. the solution enabling formula HDI*~VT** | | |
|---|---|---|
| Condition | consistency | coverage |
| the degree of status of CCE as a separate subject (S) | 0.84 | 0.84 |
| the tendency to assess students in relation to CCE (A) | 0.81 | 0.77 |
| the tendency to evaluate schools in relation to CCE (E) | 0.82 | 0.78 |
| the quality of civic culture in schools (C) | 0.56 | 0.76 |
| the degree of specialization of teachers teaching CCE (T) | 0.54 | 0.74 |
| ~the degree of status of CCE as a separate subject (~S) | 0.2 | 0.71 |
| ~the tendency to assess students in relation to CCE (~A) | 0.19 | 0.83 |
| ~the tendency to evaluate schools in relation to CCE (~E) | 0.18 | 0.78 |
| ~the quality of civic culture in schools (~C) | 0.5 | 0.91 |
| ~the degree of specialization of teachers teaching CCE (~T) | 0.51 | 0.92 |
| **ESTABLISHED DEMOCRACIES, i.e. the solution enabling formula HDI*E** | | |
| Condition | consistency | coverage |
| the degree of status of CCE as a separate subject (S) | 0.29 | 0.82 |
| the tendency to assess students in relation to CCE (A) | 0.62 | 0.86 |
| the tendency to evaluate schools in relation to CCE (E) | 0.63 | 0.73 |
| the quality of civic culture in schools (C) | 0.82 | 0.7 |
| the degree of specialisation of teachers teaching CCE (T) | 0.27 | 0.68 |
| ~the degree of status of CCE as a separate subject (~S) | 0.82 | 0.74 |
| ~the tendency to assess students in relation to CCE (~A) | 0.38 | 0.53 |
| ~the tendency to evaluate schools in relation to CCE (~E) | 0.37 | 0.64 |
| ~the quality of civic culture in schools (~C) | 0.26 | 0.98 |
| ~the degree of specialisation of teachers teaching CCE (~T) | 0.82 | 0.78 |

*Notes: ~ indicates the negation, i.e. the absence of condition. Consistency is the degree of sub-set relationship of necessity. Coverage is the proportion of membership in the outcome explained by the solution (Ragin, 2008)*

The argument behind for two separate analyses is the hypothesis of whether the level of social and human development has an effect on combination of factors that contribute to the success

of high civic knowledge (see Table 5 for the truth tables of both contexts). The assumption is that in countries with established democratic traditions civic culture is important, whereas in emerging democracies sound formal regulations and enforcement mechanisms play a central role. The first step of analysis – the analysis of remote conditions, assured this assumption.

**Table 5: The truth table analysis of proximate conditions**

| **EMERGING DEMOCRACIES** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| S | A | E | C | T | nr of cases | HCK (Outcome) | consistency | cases |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | Slovak Republic |
| 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0.98 | Hong Kong SAR |
| 1 | 1 | 1 | 1 | 0 | 2 | 1 | 0.97 | Slovenia, Poland |
| 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0.96 | Switzerland |
| 1 | 1 | 1 | 1 | 1 | 3 | 1 | 0.84 | England, Lithuania, Korea |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0.72 | Czech |
| 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0.3 | Latvia |
| **ESTABLISHED DEMOCRACIES** | | | | | | | | |
| S | A | E | C | T | nr of cases | HCK (Outcome) | consistency | cases |
| 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1.00 | Finland |
| 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0.98 | Sweden, New Zealand |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.96 | Denmark |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.89 | England |
| 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0.62 | Netherlands, Belgium |
| 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0.54 | Austria |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0.25 | Cyprus |

*S - status of CCE as a separate subject; A – assessment of students on CCE in force ; E – evaluation of schools relation to CCE; C – vital civic culture in schools; T – specialization of teachers on CCE

## Results and discussion

We attempted to explore the link between quality assurance and students' civic achievement by taking the configurational causality as a basic methodological assumption. From theoretical point of view we assumed that countries with different level of social and human development may follow different paths in pursuing the quality of civic and citizenship education. In order to manage this complexity we distinguished remote and proximate factors (conditions) that may be associated with the high civic knowledge (i.e. positive outcome).

Three research questions were set. As a response to first of them, we found that human development measured by the HDI can be regarded as a necessary remote condition for HCK. Almost all cases (with two contradictions, i.e. 19 out of 21; the consistency level 0.89) which showed the high membership score of condition of HDI, also showed the positive outcome –

high civic knowledge. Whereas this finding is something what one could expect, an interesting difference between emerging and established democracies became also apparent in terms of remote conditions. In established democracies high public expenditures to education enable better outcome. In emerging countries, however, the success in CCE is negatively associated with high voting turnout. We suggest that this may be an indicator of overheated political debates. Permanent reforms in education that are the result of political confrontations hinder daily work of schools and teachers and do not allow performing high in knowledge.

Secondly we asked, whether national testing can be the necessary component in the configuration, which produces high civic achievement? This assumption proved to be partially invalid, because the consistence level of relevant condition remained in all cases below 0.9 level. However, the analysis suggests that the outcome of CCE in emerging democracies is much more dependent on precise rules and regulations on status of the subject and teaching and learning process. The path that includes status of the CCE as a separate subject, assessment of students in CCE and evaluation of schools in this area, is typical for seven countries out of eight in this group. (The fact that England falls also into group of "emerging" countries can be explained by the fact that it introduced CCE quite recently, in 2002). In established countries, the overall picture is more fragmented. Here 5 countries are split in three different paths. The major commonality lies in the importance of civic culture in the school and, contrary to the emerging countries, in importance of having CCE as a non-separate subject and non-specialized teachers. In sum, these finding suggests that in established democracies the high civic knowledge is largely the effect of the shared commitment and democratic school ethos.

**Table 6: Sufficient configurations for high civic knowledge for both groups of countries**

| | EMERGING DEMOCRACIES | | ESTABLISHED DEMOCRACIES | | |
|---|---|---|---|---|---|
| | S*A*E | S*~A*E*~C*~T | ~S*A*C*~T | S*~A*~E*~C*~ | S*A*E*C*T |
| Cases | England (0.99, 0.81), Korea (0.99, 0.99), Lithuania (0.99, 0.59), Switzerland (0.99, 0.91), Slovenia (0.98, 0.77), Poland (0.73, 0.94), Slovak (0.73, 0.9) | Hong Kong (1, 0.98) | Finland, New Zealand, Sweden | Denmark | England |
| Number of cases | 7 | 1 | 3 | 1 | 1 |
| Coverage | 0.66 | 0.11 | 0.42 | 0.12 | 0.16 |
| Consistency | 0.8 | 0.98 | 0.99 | 0.96 | 0.89 |
| | Solution coverage 0.78<br>Solution consistency 0.88 | | Solution coverage: 0.66<br>Solution consistency 0.95 | | |

*S - status of CCE as a separate subject; A – assessment of students on CCE in force ; E – evaluation of schools relation to CCE; C – vital civic culture in schools; T – specialization of teachers on CCE

Obviously it is hard to achieve a clear causal link between national policy and national performance in international tests because of multiple contextual factors. However, QCA fuzzy set method allows better contextualization of large scale survey results by making use of qualitative data of Encyclopedias. It allows investigating link between macro-social and policy characteristics, and students' achievement that is still far from being fully explored. From the practical point of view current study findings allow to improve national quality assurance systems in secondary education. Showing multiple configurations to success avoids simplistic policy transfer and supports smart and holistic learning of foreign experience. This becomes especially important today when countries increasingly learn from each other.

## References

Abs, H.J. (ed.) (2009). *Introducing Quality Assurance of Education for Democratic Citizenship in Schools. Comparative Study of 10 Countries*. Strasbourg: Council of Europe Publishing.

Ainley, J., Schulz, W, Friedman, T. (eds) (2013). *ICCS 2009 Encyclopeadia. Approaches to civic and citizenship education around the world.* Amsterdam: IEA.

Birzea, C., Cecchini, M., Harrison, C., Krek, J., Spajic-Vrkaš, V. (2005) *Tool for Quality Assurance for Democratic Citizenship in Schools*. UNESCO, Council of Europe: UNESCO Publishing.

Furlong, J., Cochran-Smith, M.,Brennan, M. (2009). Policy and Politics in Teacher Education. International Perspectives. London, New York: Routledge.

Ingvarsson, L., Scwille, J., Tatto, M.T., Rowley, G., Peck, R., Senk, S. (2012). TEDS-M Policy report: A Guide to teacher education context, structure and quality assurance arrangements in the seventeen TEDS-M countries. Amsterdam: IEA (forthcoming).

Kenworthy, L., Hicks,A. (2008). *Method and Substance in Macrocomparative Analysis*. NY: Palgrave Macmillan.

Landman, T., Robinson, N. (2009) *Sage Handbook of Comparative Politics*. London: Sage.

Ozga, J., Dahler-Larsen, P., Segerholm, C., Simola, H. (eds.) (2011) *Fabricating Quality in Education. Data and Governace in Europe.* London: Routledge.

Ragin, Ch. (1987). *The Comparative Method. Moving beyond Qualitative and Quantitative Strategies*. Berkeley: University of Califormia Press.

Ragin. Ch. (2008). *Redesigning Social Inquiry. Fuzzy Sets and Beyond*. University of Chicago Press.

Rihoux, B.; Ragin, C. (2009). *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques*. (Applied Social Research Methods Series). London: Sage.

Schleicher, A. (2012) (ed.). *Preparing Teachers and Developing school Leaders for the 21st Century. Lessons from around the World*. OECD Publishing.

Schulz, W., Ainley, J., Fraillon, J., Kerr, D., Losito, B. (2010). *ICCS 2009 International Report: Civic Knowledge, Attitudes, an Engagement among Lower-secondary School Students in 38 Countries.* Amsterdam: IEA.

Schneider, C.Q.; Wagemann, C. 2006. Reducing complexity in Qualitative Comparative Analysis (QCA): Remote and proximate factors and the consolidation of democracy. *European Journal of Political Research* 45: 751–786.

Schneider, C.Q.; Wagemann, C. 2010. Standards of Good Practice in Qualitative Comparative Analysis (QCA) and Fuzzy-Sets. *Comparative Sociology*, 9: 1-22.

Schneider, C, Wagemann, C. (2012) *Set-theoretic methods for social sciences. A guide to qualitative comparative analysis*. Cambridge: Cambridge University Press.

**Appendix 1: Remote conditions, calibration and thresholds for calibration**

| Thresholds | 0.9, 0.81, 0.78 | | 6.1, 5, 4.1 | | 29, 34, 45 | | 82, 65, 50 | | 540, 500, 470 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Source | United Nations | | ICCS 2009 Encyclopedia | | ICCS 2009 Encyclopedia | | ICCS 2009 Encyclopedia | | ICCS 2009 International Report | |
| Country | HDI | HDI_cal | E | E_cal | G | G_cal | VT | VT_cal | Outcome | OC_cal |
| Austria | 0.895 | 0.94 | 5.4 | 0.75 | 29.1 | 0.95 | 81.7 | 0.95 | 503 | 0.56 |
| Belgium (Flemish) | 0.897 | 0.95 | 6.1 | 0.95 | 33 | 0.65 | 93.1 | 0.99 | 514 | 0.74 |
| Bulgaria | 0.782 | 0.06 | 4.1 | 0.05 | 29.2 | 0.95 | 55.8 | 0.14 | 466 | 0.03 |
| Chile | 0.819 | 0.57 | 3.4 | 0 | 52 | 0.01 | 87.7 | 0.98 | 483 | 0.15 |
| Chinese Taipei | 0.699 | 0 | 4.4 | 0.12 | NA | 0.5 | 58.5 | 0.21 | 559 | 0.99 |
| Colombia | 0.719 | 0 | 3.9 | 0.02 | 58.5 | 0 | 40.5 | 0.01 | 462 | 0.02 |
| Czech Republic | 0.873 | 0.89 | 4.6 | 0.21 | 25.8 | 0.99 | 64.5 | 0.48 | 510 | 0.68 |
| Cyprus | 0.848 | 0.78 | 7.1 | 1 | NA | 0.5 | 89 | 0.99 | 453 | 0.01 |
| Denmark | 0.901 | 0.95 | 7.9 | 1 | 24.7 | 1 | 86.6 | 0.98 | 576 | 1 |
| Dominican Republic | 0.702 | 0 | 2.2 | 0 | 48.4 | 0.02 | 56.5 | 0.15 | 380 | 0 |
| England | 0.875 | 0.9 | 5.6 | 0.84 | 36 | 0.37 | 61.4 | 0.33 | 519 | 0.81 |
| Estonia | 0.846 | 0.77 | 5 | 0.5 | 36 | 0.37 | 61.9 | 0.35 | 525 | 0.87 |
| Finland | 0.892 | 0.94 | 5.9 | 0.92 | 26.9 | 0.99 | 65 | 0.5 | 576 | 1 |
| Greece | 0.86 | 0.84 | 4 | 0.03 | 34.3 | 0.48 | 74.1 | 0.83 | 476 | 0.08 |
| Guatemala | 0.581 | 0 | 3.2 | 0 | 53.7 | 0 | 60.5 | 0.29 | 435 | 0 |
| Honk Kong SAR | 0.906 | 0.96 | 3.3 | 0 | 43.4 | 0.07 | 45.2 | 0.02 | 554 | 0.98 |
| Indonesia | 0.629 | 0 | 3.5 | 0.01 | 37.6 | 0.27 | 84.1 | 0.97 | 433 | 0 |
| Ireland | 0.916 | 0.97 | 4.9 | 0.42 | 34.3 | 0.48 | 67 | 0.59 | 534 | 0.93 |
| Italy | 0.881 | 0.91 | 4.3 | 0.09 | 36 | 0.37 | 80.5 | 0.94 | 531 | 0.91 |
| Korea. Republic of | 0.909 | 0.96 | 4.2 | 0.06 | 31.6 | 0.81 | 46 | 0.02 | 565 | 0.99 |
| Latvia | 0.814 | 0.53 | 5 | 0.5 | 36.3 | 0.35 | 61 | 0.31 | 482 | 0.14 |
| Liechtenstein | 0.883 | 0.92 | NA | 0.5 | NA | 0.5 | 84.6 | 0.97 | 531 | 0.91 |
| Lithuania | 0.818 | 0.57 | 4.7 | 0.27 | 35.8 | 0.38 | 48.6 | 0.04 | 505 | 0.59 |
| Luxembourg | 0.875 | 0.9 | 3.7 | 0.01 | NA | 0.5 | 91.7 | 0.99 | 473 | 0.06 |
| Malta | 0.847 | 0.77 | 4.8 | 0.34 | NA | 0.5 | 93.3 | 0.99 | 490 | 0.27 |
| Mexico | 0.775 | 0.03 | 4.8 | 0.34 | 51.6 | 0.01 | 58.9 | 0.23 | 452 | 0.01 |
| Netherlands | 0.921 | 0.98 | 5.5 | 0.8 | 30.9 | 0.87 | 80.4 | 0.94 | 494 | 0.35 |
| New Zealand | 0.919 | 0.97 | 6.2 | 0.96 | 36.2 | 0.35 | 79.5 | 0.93 | 517 | 0.78 |
| Norway | 0.955 | 0.99 | 6.7 | 0.99 | 25.8 | 0.99 | 77.4 | 0.9 | 515 | 0.75 |
| Paraguay | 0.669 | 0 | 4 | 0.03 | 53.2 | 0.01 | 65.5 | 0.52 | 424 | 0 |
| Poland | 0.821 | 0.59 | 4.9 | 0.42 | 34.9 | 0.44 | 53.9 | 0.1 | 536 | 0.94 |
| Russian Federation | 0.788 | 0.1 | 3.9 | 0.02 | 43.7 | 0.07 | 63.7 | 0.44 | 506 | 0.61 |
| Slovak Republic | 0.84 | 0.73 | 3.6 | 0.01 | 25.8 | 0.99 | 54.7 | 0.11 | 529 | 0.9 |
| Slovenia | 0.892 | 0.94 | 5.2 | 0.63 | 31.2 | 0.84 | 63.1 | 0.41 | 516 | 0.77 |
| Spain | 0.885 | 0.92 | 4.4 | 0.12 | 34.7 | 0.45 | 75.3 | 0.86 | 505 | 0.59 |
| Sweden | 0.916 | 0.97 | 6.7 | 0.99 | 25 | 1 | 82 | 0.95 | 537 | 0.94 |
| Switzerland | 0.913 | 0.97 | 5.3 | 0.69 | 33.7 | 0.54 | 48.3 | 0.03 | 531 | 0.91 |
| Thailand | 0.69 | 0 | 4.9 | 0.42 | 42.5 | 0.09 | 78.5 | 0.92 | 452 | 0.01 |

*HDI – Human Development Index, E – public expenditure on education (% of GDP), G – Gini Index (calibrated inversely, i.e. the higher the membership score the more equitable country), Voter Turnout at Last Legisaltive Election (%)

## Appendix 2: Proximate conditions, calibration and thresholds for calibration

| Thresholds | 8, 5, 3 | | | | 1, 2, 3 | | 8, 5, 3 | | 540, 500, 470 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Source | status of CCE as subject in curricula (specific subject (6); integrated (3); crosscurricula (1) | | IEA: (external) assessment of students in relation to CCE Y=1; N=0 | IEA: assessment of schools in realtion to CCE Y=1; N=0 | Civic culture at school (index of student participation, parent involvement and school/community links) | | Specialization of teachers in CCE (specialists in CCE - 6; integrated specialists - 3; all teachers - 1) | | ICCS 2009 International Report | |
| Country | S | S_cal | A | E | C | C_cal | T | T_cal | Outcome | OC_cal |
| Austria | 4 | 0,18 | 0 | 0 | 3 | 0,95 | 4 | 0,18 | 503 | 0.56 |
| Belgium (Flemish) | 4 | 0,18 | 0 | 1 | 3 | 0,95 | 4 | 0,18 | 514 | 0.74 |
| Bulgaria | 4 | 0,18 | 1 | 1 | 3 | 0,95 | 3 | 0,05 | 466 | 0.03 |
| Chile | 4 | 0,18 | 1 | 1 | 3 | 0,95 | 4 | 0,18 | 483 | 0.15 |
| Chinese Taipei | 7 | 0,88 | 1 | 1 | 3 | 0,95 | 6 | 0,73 | 559 | 0.99 |
| Colombia | 10 | 0,99 | 1 | 1 | 3 | 0,95 | 4 | 0,18 | 462 | 0.02 |
| Czech Republic | 10 | 0,99 | 0 | | 1 | 0,05 | 3 | 0,05 | 510 | 0.68 |
| Cyprus | 4 | 0,18 | 0 | 0 | 3 | 0,95 | 6 | 0,73 | 453 | 0.01 |
| Denmark | 4 | 0,18 | 0 | 0 | 1 | 0,05 | 4 | 0,18 | 576 | 1 |
| Dominican Republic | 10 | 0,99 | 1 | 1 | 2 | 0,5 | 3 | 0,05 | 380 | 0 |
| England | 10 | 0,99 | 1 | 1 | 3 | 0,95 | 10 | 0,99 | 519 | 0.81 |
| Estonia | 10 | 0,99 | 1 | 0 | 2 | 0,5 | 9 | 0,98 | 525 | 0.87 |
| Finland | 4 | 0,18 | 1 | 0 | 3 | 0,95 | 4 | 0,18 | 576 | 1 |
| Greece | 3 | 0,05 | 1 | 1 | 3 | 0,95 | 3 | 0,05 | 476 | 0.08 |
| Guatemala | 4 | 0,18 | 0 | 0 | 3 | 0,95 | 4 | 0,18 | 435 | 0 |
| Honk Kong SAR | 1 | 0,0 | 0 | 1 | 0 | 0,0 | 1 | 0,0 | 554 | 0.98 |
| Indonesia | 6 | 0,73 | 1 | 1 | 3 | 0,95 | 9 | 0,98 | 433 | 0 |
| Ireland | 10 | 0,99 | 1 | 1 | 2 | 0,5 | 10 | 0,99 | 534 | 0.93 |
| Italy | 4 | 0,18 | 1 | 0 | 3 | 0,95 | 4 | 0,18 | 531 | 0.91 |
| Korea. Republic of | 10 | 0,99 | 1 | 1 | 3 | 0,95 | 9 | 0,98 | 565 | 0.99 |
| Latvia | 4 | 0,18 | 1 | 1 | 3 | 0,95 | 9 | 0,98 | 482 | 0.14 |
| Liechtenstein | 3 | 0,05 | 1 | 0 | 3 | 0,95 | 3 | 0,05 | 531 | 0.91 |
| Lithuania | 10 | 0,99 | 1 | 1 | 3 | 0,95 | 9 | 0,98 | 505 | 0.59 |
| Luxembourg | 6 | 0,73 | 1 | 0 | 2 | 0,5 | 3 | 0,05 | 473 | 0.06 |
| Malta | 4 | 0,18 | 1 | 1 | 3 | 0,95 | 3 | 0,05 | 490 | 0.27 |
| Mexico | 10 | 0,99 | 1 | 1 | 3 | 0,95 | 10 | 0,99 | 452 | 0.01 |
| Netherlands | 3 | 0,05 | 0 | 1 | 3 | 0,95 | 3 | 0,05 | 494 | 0.35 |
| New Zealand | 4 | 0,18 | 1 | 1 | 3 | 0,95 | 3 | 0,05 | 517 | 0.78 |
| Norway | 3 | 0,05 | 1 | 1 | 2 | 0,5 | 3 | 0,05 | 515 | 0.75 |
| Paraguay | 9 | 0,98 | 1 | 1 | 2 | 0,5 | 9 | 0,98 | 424 | 0 |
| Poland | 6 | 0,73 | 1 | 1 | 3 | 0,95 | 3 | 0,05 | 536 | 0.94 |
| Russian Federation | 7 | 0,88 | 1 | 1 | 2 | 0,5 | 9 | 0,98 | 506 | 0.61 |
| Slovak Republic | 6 | 0,73 | 1 | 1 | 1 | 0,05 | 9 | 0,98 | 529 | 0.9 |
| Slovenia | 9 | 0,98 | 1 | 1 | 3 | 0,95 | 4 | 0,18 | 516 | 0.77 |
| Spain | 10 | 0,99 | 1 | 1 | 3 | 0,95 | 3 | 0,05 | 505 | 0.59 |
| Sweden | 4 | 0,18 | 1 | 1 | 3 | 0,95 | 4 | 0,18 | 537 | 0.94 |
| Switzerland | 10 | 0,99 | 1 | 1 | 0 | 0,0 | 3 | 0,05 | 531 | 0.91 |
| Thailand | 3 | 0,05 | 1 | 1 | 3 | 0,95 | 3 | 0,05 | 452 | 0.01 |