
1 **School Choice Policy: seeking to**
2 **balance educational efficiency and equity.**
3 **A Comparative Analysis of 20 European Countries**

4 **TRIIN LAURI**

5 *Institute of Political Science and Governance, Tallinn University, Estonia*

6 **KAIRE PÕDER**

7 *Department of Economics, Tallinn University of Technology, Estonia*

8 ABSTRACT In recent years, the degree of choice in education systems has increased in most countries.
9 Still, the variation of choice policies across countries is substantial. The authors ask under what
10 combinations of conditions (i.e. institutional features of education systems) choice policy succeeds in
11 balancing educational efficiency and equity. Using the fuzzy-set qualitative comparative analysis, they
12 investigate the impact of seven institutional conditions in 20 European countries. Those seven
13 conditions are identified in school choice literature as relevant in explaining variations in educational
14 efficiency and equity. The analysis shows that there are multiple causal paths to good policy outcome.
15 The main contribution of this article is to show that ‘choice’ is an INUS condition (i.e. an insufficient
16 but necessary part of an unnecessary but sufficient combination of conditions) and that ‘no tracking’ is
17 a necessary condition for educational efficiency and equity. In addition, the authors show that ‘good
18 management’ and ‘competition’ of schools contribute to good educational outcomes only in choice-
19 tolerant countries.

20 **Introduction**

21 In the last 25 years, market elements – such as increased ‘consumer’ choice, published performance
22 indicators and financial reward for success – have been introduced in many areas of public policy,
23 including education. More than two-thirds of member countries of the Organisation for Economic
24 Co-operation and Development (OECD) have increased school choice opportunities for parents
25 (OECD, 2010), and school choice is perhaps one of the most ardently discussed issues in the current
26 education policy debate. The initial instruments of school choice (e.g. Friedman, 1955), enforced
27 mainly in England and the United States, were related to equal opportunities for education and
28 included different types of government-funded voucher schemes to support students of different
29 backgrounds in attending private schools or those with good reputations. However, today’s
30 interpretation of school choice is more triggered by the wave of decentralisation of education as a
31 part of a bigger movement within new public management (NPM) and in this context the problem
32 points to the reforms which gave parents the right to influence the decisions concerning the
33 allocation of pupils to schools. The NPM arguments for school choice have been more focused on
34 efficiency than on equity concerns.

35 In this analysis we define school choice as one component of the complex configuration of
36 educational governance. However, the design of the school choice policy is not only a simple
37 theoretical matching exercise. Various institutional features – some of them path-dependent – enter
38 into the game. Policy literature has argued that school systems based on informed choice among
39 autonomous schools improve student achievement by creating incentives for students, parents,

40 teachers, schools and administrators to provide the best learning environment and to bring about
 41 innovation (Le Grand, 2007; Woessmann et al, 2009; Musset, 2012). However, on empirical
 42 grounds there is interdisciplinary cross-country evidence that choice segregates, meaning that less-
 43 advantaged families and students **will rather DO YOU MEAN THEY PREFER TO GO TO**
 44 **THESE SCHOOLS OR THAT THEY END UP GOING TO THESE SCHOOLS?** go to the local,
 45 less prestigious schools (the following are just some references out of many: West, 2006; **Böhlmark**
 46 **& Lindahl, 2007 NOT IN REFS – PLEASE SUPPLY DETAILS**; Kiltgaard, 2007; Willmore, 2008;
 47 Riedel et al, 2009; West & Ylönen, 2009; Bukowska & Siwinska-Gorzalak, 2011). Thus we are after
 48 not just matching principles or quasi-market design, but also ‘widely defined’ institutional design.

49 Inspired by empirical ambiguity and a paradigmatic shift of governance towards active
 50 citizenship and a fading polarisation of choice models, we define our research problems as follows:
 51 (1) What are the necessary and sufficient combinations of conditions (institutional features of
 52 educational policy) to achieve educational efficiency and equity? (2) What kind of causal paths,
 53 including less choice tolerance, manage to find a balance between educational efficiency and
 54 equity? In the terms of qualitative comparative analysis (QCA), the balanced mix of educational
 55 efficiency and equity is the so-called good outcome resulting from various combinations of
 56 conditions.[1] In our case these institutional conditions are: availability of school choice; the
 57 system’s ability to track students; availability of early childhood education; share of private
 58 providers; funding principles of private contributors; autonomy and accountability of the schools.
 59 We have three testable hypotheses about the relationships between outcome and combinations of
 60 conditions.

61 First, ‘no tracking’ is a necessary condition for producing equity and efficiency within the
 62 education system. By no tracking we mean that in primary and lower secondary levels of education
 63 children are not grouped according to their ability into different schools or within school into
 64 different classes.

65 Second, ‘configure choice properly’ **hypotheses HYPOTHESIS** – meaning that there are
 66 combinations of educational institutional features which manage to avoid the compromise
 67 between educational efficiency and equity and rather allow complementarity between these dual
 68 priorities. The second hypothesis has two parts – ‘competition’ and ‘good management’,
 69 controlling for policy mixes that are applicable only in the case of school choice cases (like Sweden,
 70 Netherland, England or Ireland). The first part tests the idea that the share of private providers and
 71 incentivising funding matters; the second part alternatively tests whether accountability and
 72 autonomy are vital for the good outcome.

73 Third, ‘choice’ is an INUS condition.[2] This means that parental freedom to choose is one of
 74 the necessary components in the solution configuration which produces educational efficiency and
 75 equity, but this is not the only solution. There are other sufficient solution configurations (paths) as
 76 well, where choice is not a component. To produce the outcome, choice has to be in the
 77 configuration with other conditions (institutional features) to constitute the sufficient combination.

78 To answer the research questions we use fuzzy-set qualitative comparative analysis (fuzzy-set
 79 QCA). We find the method appealing not only because of its novelty, but mainly because we
 80 believe that there exists a research gap – that is, most researches are case specific; ‘conventional’
 81 methods fail because of the complexity of institutional set-ups and the limited number of
 82 observations. Fuzzy-set QCA can be used as a bridge between qualitative and quantitative design as
 83 it allows for difference in kind (qualitative anchors) and difference in degree (calibration of
 84 conditions), as Ragin (2008) indicates. Also it implies that different causal paths – each path being
 85 relevant in a distinctive way – may lead to the same outcome. In other words, it enables the
 86 analysis of equifinality.

87 We continue as follows. First, we discuss existing policy literature and make our hypothesis
 88 formulation transparent. Second, we indicate the data and sources for the analysis. The third part
 89 shows the outcomes of fuzzy-set analysis and empirical typologies, aiming at testing our
 90 hypotheses (finding necessary and sufficient conditions). Finally, we develop policy implications
 91 based on our results.

92 Literature for Hypothesis Formulation

93 Policy literature is accumulating around the OECD ‘comparative turn’ by introducing new
 94 performance standards in education, new arrangements for education systems and new evaluation
 95 coordination (Martens et al, 2010). **NOT IN REFS – PLEASE SUPPLY DETAILS** While school
 96 choice is also a highly charged ideological battleground there is wide agreement that school
 97 systems need to be improved, but equally wide disagreement about the extent to which choice can
 98 produce it. Although it is quite common to distinguish between two opposite models of school
 99 choice – (1) the catchment area-based, more equity-oriented comprehensive system, and (2) the
 100 liberal, efficiency-seeking choice-based model, the opposition of these is not so dichotomised.
 101 Rather, most countries allow parents and students to select their school from a diverse array of
 102 choice, even though the majority of countries rely mostly on public schools to provide education at
 103 the primary and lower secondary levels (Eurydice, 2012). Nowadays, initial geographical
 104 assignment in elementary school is frequently accompanied by more flexible choice options later
 105 on in lower-secondary or secondary levels of education in most OECD countries.

106 Even the countries which have tried to resist the choice-supportive policy initiatives have
 107 acknowledged that even without any formal choice mechanisms, some parents still find ways to
 108 exercise choice and choose the school for their children, finding ways to go around the official
 109 policies, by declaring another address than their real residence, for example, buying into a
 110 neighbourhood to gain access to a particular school, or even engaging themselves in the definition
 111 of catchment boundaries (e.g. Musset, 2012). As this capacity is strongly linked to their social,
 112 cultural and economic resources, it is considered **un-equitable INEQUITABLE** and this is one of
 113 the reasons that leads countries to the introduction of more straightforward choice models instead
 114 of latent self-regulated ways of **CONSTRUCTING** choice strategies. Taking the last argument into
 115 account and developing it with the expanding literature on active citizenship (e.g. Newman &
 116 Clarke, 2009; Lauri, 2013), we claim that the importance of choice policy is growing.

117 Some authors (Hirsch, 2002; Bett & Loveless, 2003 **NOT IN REFS – PLEASE SUPPLY**
 118 **DETAILS**; Le Grand, 2007; Woessmann, 2008; Musset, 2012) have been optimistic about designing
 119 choice policies which offer a good policy mix – that is, they argue that it is possible to determine
 120 the conditions that a policy based on choice and competition needs to fulfil to meet the efficiency
 121 and equity criteria. Based on the aforementioned authors, there are basically three criteria which
 122 have to be kept in mind when designing choice policies: (1) increasing the ability of users to make
 123 choices (e.g. parents must be properly informed about the quality of the alternatives, supporting
 124 transportation); (2) decreasing the ability of providers to make choices (e.g. to avoid cream-
 125 skimming by quota, lottery or central criteria); and (3) widening the extent of competition
 126 (competition must be real).

127 Woessmann et al, (2009) and Woessmann and Schütz (2006) indicate that efficiency and
 128 equity must not be perceived inevitably as substitutes – certain policies may use the two aims in
 129 such a way that they complement each other. According to them, the efficiency-enhancing
 130 educational reforms in Europe, which have not caused any well-documented compromise with
 131 equity, have been policies that introduce competition, choice and market forces into the school
 132 system. However, since public funding may increase the set of choices for poor families, the
 133 positive effect of public funding may be another aspect of the skill-enhancing capacity of school
 134 choice and competition. Thus, school systems based on public–private partnerships where the state
 135 finances schools but contracts their operation out to the private sector seem to be the most
 136 effective school systems.

137 Another promising institutional structure that could, according to Woessmann et al (2009),
 138 lead to substantial gains in many European education systems is a combination of accountability
 139 and school autonomy – that is, **A COMBINATION OF** institutional features that introduce
 140 accountability by externally testing and making public the quality of what students and schools
 141 deliver, creating the proper incentives to improve educational performance. And the third potential
 142 way to drive efficiency is related to teachers’ quality and the financial instruments to motivate the
 143 better ones.

144 At the same time, one policy with a substantial negative impact on the equality of
 145 opportunity achieved in a school system is the timing of the tracking of students into different kinds
 146 of schools based on their ability (e.g. Woessmann & Schütz, 2006; Braga et al, 2013). Another key

147 solution for a more equitable school system, and the main argument based on the skill multiplier
 148 effect, is the extensive system of early education in terms of both duration and enrolment. In
 149 addition, targeted vouchers and the improvement of the quality of the teaching have been
 150 mentioned as evidence-based instruments for educational equity enhancement. Woessman and
 151 Schütz (2006) conclude that, after considering the mentioned policy initiatives in Europe, there
 152 appears to be no strong evidence for a substantive trade-off between efficiency and equity at the
 153 system level. Rather, there is some evidence for complementarities of certain policies in raising
 154 both efficiency and equity, most notably for policies that increase early education, and well-
 155 designed forms of choice and accountability.

156 Summing up the existing literature allows us to formulate three hypotheses about the
 157 institutional features of good policy mixes that lead to a good outcome. By policy mixes we
 158 consider combinations of conditions [3], and the normative adjective ‘good’ indicates that they lead
 159 to an outcome that meets the 0.5 [CHANGED FROM 0,5 – OK?] threshold in the Boolean
 160 multiplication of efficiency and equity scores (see Appendix 1).[4] Thus, these factors act together,
 161 configurationally, to produce the outcome under investigation. First, we hypothesise that tracking
 162 is harmful in any configurations, and thus we name it the ‘no tracking’ hypothesis:

$$164 \quad \sim T \leftarrow EF EQ \quad (1)$$

165 where $\sim T$ indicates no tracking [5] and EF EQ is an outcome indicator – efficiency and equity of the
 166 educational system. Second, we have two policy mixes for controlling the ‘configure choice
 167 properly’ hypothesis that are not mutually exclusive. We investigate whether there are alternative
 168 combinations of educational institutional features under the aforementioned conditions of ‘choice’
 169 and ‘no tracking’ which manage to avoid the compromise between educational efficiency and
 170 equity, and rather lead to complementarity between these dual priorities. The first of these
 171 combinations is:

$$173 \quad C^* \sim T^* P^* F \rightarrow EF EQ \quad (2.1)$$

174 or the so-called competition hypothesis, where E is the magnitude and comprehensiveness of early
 175 childhood education, P is the share of private schools, and F is the public contribution within a
 176 private system. And for less private provision-oriented cases (like many Eastern European systems),
 177 alternatively, the ‘good management hypotheses’ is:

$$179 \quad C^* \sim T^* AC^* AU \rightarrow EF EQ \quad (2.2)$$

180 where AC and AU stand for accountability and autonomy of schools. This latter one we call the
 181 ‘good management hypothesis’ because it entails aspects of school-specific decision tracks (see also
 182 section 3.2). Summing up (2.1) and (2.2), we can say that choice-no-tracking systems lead to good
 183 outcome via either a well-combined competitive **MIX** or a well-managed policy mix.

$$184 \quad C^* \sim T^* E^* ((P^* F) + (AC^* AU)) \rightarrow EF EQ \quad (2)$$

185
 186 **EQUATION 2 HERE – SHOULD THIS BE EQUATION 3?**

187
 188 In addition, we test whether ‘choice’ (C) is an INUS condition.

$$189 \quad C + INUS \text{ condition} \quad (3)$$

191 **EQUATION 3 HERE – SHOULD THIS BE EQUATION 4?**

192
 193 An INUS condition means technically in our case that choice (C) is an insufficient but necessary
 194 part of a condition which is itself unnecessary but sufficient. By arguing that choice is INUS we
 195 claim that there are sufficient combinations of conditions which manage to obtain the outcome

196 where C is one of the necessary conditions. But this combination with C itself is not necessary
197 given that there are other paths, without C, to **THE DESIRED** outcome as well. Thus, there are
198 choice-tolerant countries which obtain the good outcome (EFEQ), but their success is dependent
199 on the other, additional necessary conditions of this success ('no tracking', for instance). But to
200 obtain the outcome, countries can choose the 'no-choice' formulas as well – that is, choice is not
201 the only strategy.

202 In the formula, '*' **imply IMPLIES** logical 'and', '+' **IMPLIES** logical 'or' and arrows show
203 the necessary (\leftarrow) or sufficient (\rightarrow) relationships between configuration and outcome.

204 Data and Calibration

205 The empirical analysis focuses on 20 European educational systems. The research design enables us
206 to create typologies of school choice policy and then test whether certain combinations of
207 conditions **OF** membership elements contribute to the outcome. The latter means that we can
208 investigate the substituting and complementing of the institutional features of policy reform. For
209 operationalisation we chose available European-wide information – namely, PISA 2009, the
210 Eurydice database and OECD indicators (see Appendix 2).

211 To allow for fuzzy-set qualitative comparative analysis, we need to calibrate the raw data into
212 fuzzy sets. Fuzzy sets are membership scores of sets (conditions and outcomes) that are
213 purposefully calibrated using our data sources and literature (see Appendices 1 and 2). This is the
214 quantitative form of multiple secondary sources of information **also with THAT ALSO HAVE**
215 qualitative breakpoints or thresholds, on the basis of which we can determine the dimension's
216 degree of membership – that is, fully in or fully out and the crossover point (see Appendix 2 last
217 column). We used two types of fuzzy scores: four values **OF** fuzzy sets for qualitative data, and
218 continuous calibration for quantitative data. For calibration of the latter group and further fuzzy-set
219 QCA analysis we used the open access software fsQCA 2.5.

220 Outcome

221 The goals of education policy are usually twofold, encompassing both goals of efficient allocation
222 and goals of equitable distribution (Woessmann & Schütz, 2006). But in some cases, efficiency and
223 equity goals may be independent from (orthogonal to) one another. In other cases, there may be
224 trade-offs in the extent to which the two goals can be obtained. We are simultaneously after both
225 educational efficiency and equity, which technically means application of the Boolean minimisation
226 rule of two separate outcome indicators.

227 We operationalise the *equity* (EQ) of educational systems by using cross-country estimates of
228 the family-background effect obtained by Schütz et al (2008) and more recently by Ferreira and
229 Ginoux (2011). In both cases 'equity scores' are first calibrated to the fuzzy scores according to
230 qualitative anchors, and then averaged.

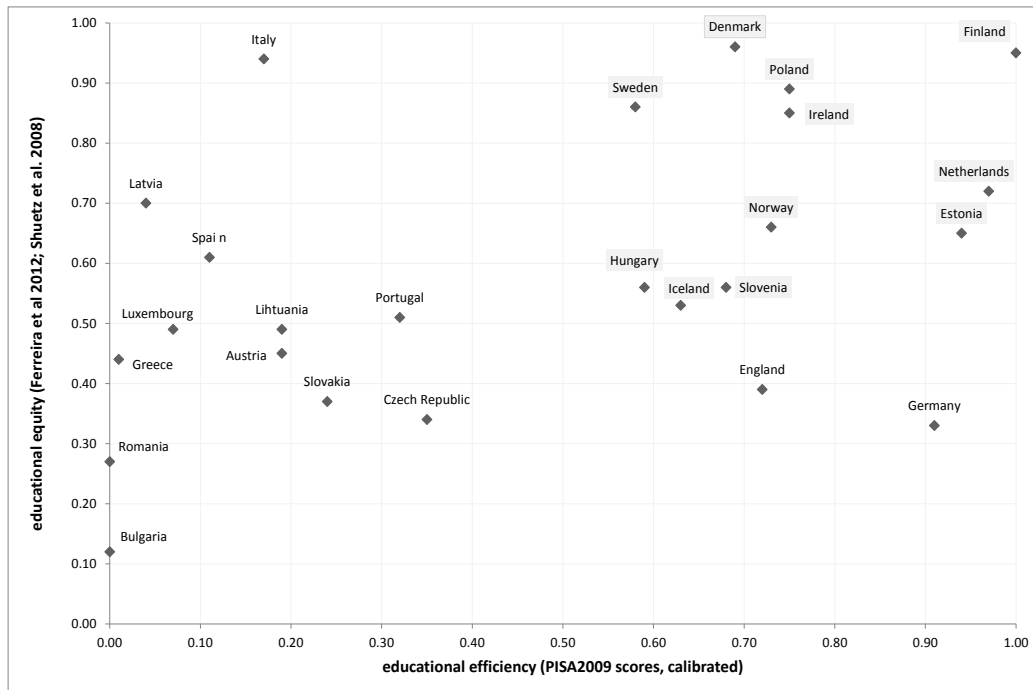
231 The concept of *efficiency* (EF) seems much more straightforward, but in reality it can indicate
232 the cost efficiency of the system or the distributional efficiency. Many studies (Woessmann et al,
233 2009) have indicated that increased financing has not affected educational results much. Thus, our
234 operationalisation has no financing dimension, and we just used the PISA 2009 combined country
235 scores, which are calculated according to average scores in mathematics, reading and science.

236 As Figure 1 indicates, there are two camps of countries, the first group with high equity and
237 efficiency scores (e.g. Finland, Netherlands, Denmark, etc.), and the second groups having low
238 scores (Greece, Romania, Bulgaria, etc.). For operationalising good policy outcome (EFEQ) we
239 used the minimum rule; thus, individual country scores will be indicated by the lowest category
240 from the two shown in Figure 1.

241 Conditions

242 First, our central condition is the scope and degree of *choice* (C) within the school system. We see
243 that the **catchment-area-based CORRECT TO ADD HYPHENS?** school 'choice' is diminishing,
244 but it is still an existing trend. However, most of the countries have some form of choice available,

245 although the degree of choice and its regulation differs. There are countries – England, Ireland,
 246 Sweden and the Netherlands – where institutional arrangements that support choice have been
 247 revealed as clear policy direction, while in others – in Finland and Denmark, for instance – choice is
 248 rather a latent result of policies that are not designed for choice, but do not prohibit it.
 249
 250



251
 252 Figure 1. Educational efficiency and equity (family-background effect)
 253 Sources: Schütz et al, 2008; PISA, 2009 **NOT IN REFS – PLEASE SUPPLY DETAILS**; Ferreira & Ginoux, 2011
 254 Note: All country labels marked by grey satisfy good outcome condition in both dimensions (EQ and EF are
 255 above 0.5 thresholds).
 256 **SCHUETZ IN THE FIGURE SHOULD BE SPELLED SCHÜTZ FOR CONSISTENCY. EDUCATIONAL**
 257 **ON THE X AND Y AXES SHOULD HAVE A CAPITAL LETTER. PLEASE SUPPLY A CORRECTED**
 258 **FIGURE**
 259

260 Choice condition (C) in this particular analysis is based on the Eurydice classification. According to
 261 this, parents in the majority of European countries are in a position to influence decisions relating
 262 to the allocation of students to public and government-dependent private schools, although to a
 263 varying extent. Eurydice (2012) indicates four identifiable models of allocation (i.e. choice models
 264 in the sense of this article): (1) children are allocated to a specific school by the public authorities
 265 based on geographical criteria (catchment area-based assignment); (2) children are allocated to a
 266 school, but parents may request an alternative; (3) parents choose a school, but the public
 267 authorities may intervene if it is over-subscribed (similar to the controlled-choice model); (4)
 268 parents choose a school, with no action by the public authorities to regulate pupil numbers. See
 269 Appendices 1 and 2 for more details.

270 Our second condition is *tracking* (T), indicating stratification of schools or classes within the
 271 school. A school system is characterised by tracking when pupils are allocated, at some stage of
 272 their school career, to different tracks, which usually differ in the curriculum offered as well as in
 273 the average motivation of enrolled students. In the North American context tracking is rather
 274 called ability grouping or streaming within a fully comprehensive schooling structure, which is also
 275 common to many Eastern European countries. In the orthodox European context tracking takes
 276 the form of well-defined separate segments in the education process, typically specialising in
 277 general and vocational education. Insofar as allocation to tracks is non-random, school tracking
 278 introduces selection into the schooling process, which may take several forms, ranging from self-

279 selection to admission based on a test or on teachers' recommendations. In most cases, selection is
 280 affected, directly or indirectly, by family background.

281 As the phenomenon of tracking can be determined either by individual-level ability grouping
 282 or by the structural level of a differentiated system, we used the average of two complementary
 283 measures: ability grouping (AG) based on PISA 2009 data, and streaming (S) based on Eurydice
 284 2012 data. See Appendix 1 and 2 for more details.

285 Third, we operationalise *early childhood education* (E). The literature seems to agree on the
 286 positive effects of early childhood education on both efficiency and equity in the education system.
 287 The evidence behind this is usually explained in various models developed by James Heckman and
 288 co-authors describing the technology of skill formation (Woessmann & Schütz, 2006; Braga et al,
 289 2011). They also show the impact on equity because the rates of return from early education
 290 investments tend to be higher for children from disadvantaged families, while at older ages they
 291 tend to be higher for children from well-off families. The cross-country evidence also shows that
 292 more extensive systems of pre-school education – in terms of both enrolment and duration –
 293 significantly increase equality of opportunity, as indicated by the lower dependence of eighth-grade
 294 students' test scores on their family background. Thus, we operationalise condition (E) as a
 295 country's enrolment rate in early education at age three according to OECD Education at Glance
 296 2012 data (see Appendices 1 and 2 for more detailed data).

297 Our fourth condition is the availability of a considerable number of *private providers* in a
 298 country's school system (P) (see Appendix 1 and 2 for more details). Our standpoint here comes
 299 from choice literature (Woessmann, 2009; Woessmann et al, 2009; Pöder et al, 2012) **2013 IN REFS**
 300 which states that systems need diversity (not in prestige terms) to enable meaningful choice, and
 301 that the state is not necessarily the best provider of education for all students. This is also often the
 302 rationale for subsidies for religious schools. Some countries, such as Denmark and the Netherlands,
 303 have a long history of church-schooling. Recent research has shown that public operation has a
 304 negative effect, but public funding of private or denominational schools has a positive effect on
 305 student achievements (Woessmann, 2009). We operationalise this condition (P) based on the
 306 Eurydice (2012), where P stands for the share of students (ISCED 1-3) **in private, either**
 307 **government dependent or private independent schools IN PRIVATE SCHOOLS, EITHER**
 308 **GOVERNMENT DEPENDENT OR PRIVATE INDEPENDENT**. According to Eurydice, a
 309 government-dependent private institution is either one that receives 50% or more of its core
 310 funding from government or one whose teaching personnel is paid by government. On the
 311 contrary, an independent private institution is one that receives less than 50% of its core funding
 312 from government or one whose teaching personnel are not paid by government.

313 Our fifth condition is related to the previous point, equalising the selection effect of private
 314 enrolment. We consider the proportion of public money in the private system – *funding* (F) – to be
 315 vital for equity, but it is not the sole factor. As indicated in the previous section, countries with a
 316 larger share of privately operated schools perform better in international achievement tests. At the
 317 same time, across countries, larger sums of public funding (as opposed to operation) are associated
 318 with better student outcomes (Woessmann & Schütz, 2006). Since public funding may increase the
 319 set of choices for poor families, the positive effect of public funding may be another aspect of the
 320 skill-enhancing capacity of school choice and competition. Thus, school systems based on public-
 321 private partnerships where the state finances schools but contracts their operation out to the
 322 private sector seem to be the most effective school systems. We use data from OECD Education at
 323 Glance 2012 to operationalise this condition (see Appendices 1 and 2). On average among OECD
 324 countries, at all levels of education combined, public expenditure per student **to ON** public
 325 institutions is nearly twice the public expenditure **to ON** private institutions (OECD, 2012).

326 Sixth, we operationalise *accountability* (AC) by using PISA 2009 data. For the score we use the
 327 availability of central examinations (see Appendices 1 and 2 for more details). There are various
 328 instruments to proxy school accountability. In recent literature the presence of central
 329 examinations (or other central testing) is used (e.g. Braga et al, 2013) because it is straightforward
 330 and allows for cross-school comparisons. Some countries have also associated a teacher-incentives
 331 scheme with the results of students' assessments (e.g. OECD, 2010), but their effects are shown to
 332 be ambiguous. The positive association between measures of accountability and student
 333 achievement is arguably the result of incentives provided by the state exams (Woessmann et al,
 334 2009). However, despite evidence showing that the introduction of test-based accountability

335 increases average student achievement, different studies have found a negative impact on equality,
 336 since schools may become more selective in order to improve their scores, not necessarily changing
 337 the quality of the teaching (Braga et al, 2013). Thus, it can be argued, following Woessmann and
 338 Schütz (2006), that accountability and school autonomy in combination are needed for the
 339 efficiency gain, but the impact of this policy mix on equity has not been intensively studied.

340 Our seventh and final condition is the degree of *autonomy* (AU) of the schools. School
 341 autonomy or the decentralisation of decision-making is also expected to exert positive effects on
 342 student outcomes, because local decision-makers tend to have superior information to the central
 343 government. At the same time, where their interests are not strictly aligned, local decision-makers
 344 may act opportunistically unless they are held accountable for the achievement of their students
 345 (Braga et al, 2011). We used one of the PISA 2009 composite indices, based on the school principals'
 346 survey. This index measures whether the school's governing board has considerable responsibility
 347 for allocating resources within the school (appointing and dismissing teachers, establishing
 348 teachers' starting salaries and salary increases, formulating school budgets and allocating them
 349 within the school).

350 Analysis

351 For fuzzy-set QCA we initially identified the necessary and only then sufficient (combinations of)
 352 conditions that bring about a good outcome. We first conducted an analysis of the necessary
 353 conditions as recommended by Schneider and Wagemann (2010) by testing our hypothesis
 354 indicated by equation (1).

355 Necessary Conditions

356 First, we identified causal conditions shared by cases with the same outcome. This means looking
 357 at whether there are conditions which always occur when the outcome (EFEQ) is present. We
 358 analysed each condition separately and also the negations of all conditions. Technically the
 359 outcome is the subset of the condition (see Figure 2). Thus the threshold for necessity is high – it is
 360 recommended to be higher than 0.75, ideally above 0.9 (Schneider & Wagemann, 2010). As the
 361 results indicate (Table I), there are no conditions which reach the most conservatively required
 362 necessity level (0.9), although the single condition that is close (0.88) is 'no tracking' (\sim T).
 363

Condition	consistency	coverage
parental freedom to choose (C)	0.65	0.74
the tendency to track children (T)	0.44	0.67
the extensivity of early childhood education (E)	0.74	0.57
considerable amount of private providers (P)	0.61	0.67
public money in private system (F)	0.71	0.73
the practice of accountability policies (AC)	0.62	0.69
the degree of school autonomy (AU)	0.6	0.56
\sim parental freedom to choose (C)	0.74	0.6
\sim the tendency to track children (T)	0.88	0.61
\sim the extensivity of early childhood education (E)	0.48	0.6
\sim considerable amount of private providers (P)	0.78	0.4
\sim public money in private system (F)	0.58	0.51
\sim the practice of accountability policies (AC)	0.64	0.53
\sim the degree of school autonomy (AU)	0.6	0.56

364

365 Notes: \sim indicates the negation, i.e. the absence of condition. Consistency is the degree of sub-set relationship of
 366 necessity. Coverage is the proportion of membership in the outcome explained by the solution (Ragin, 2008).
 367

368 Table I. Necessary conditions for good policy outcome (EFEQ).

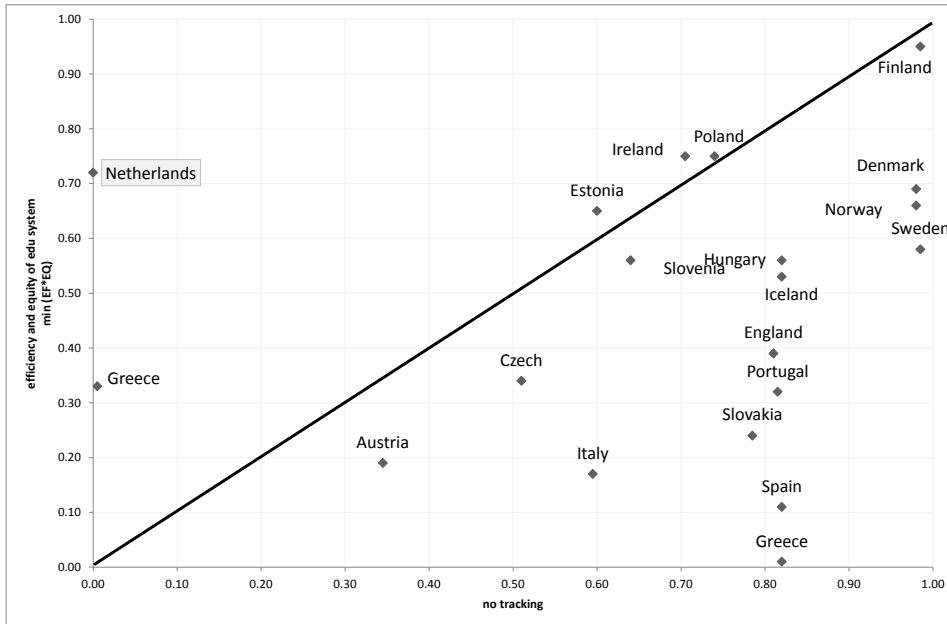
369 Source: The overview of sources in Appendix 2.

370

371 A scatter-plot of the outcome and 'no-tracking' condition (Figure 2) shows that the Netherlands is
 372 the only strong case which contradicts (outcome present while condition absent) our hypothesis, as
 373 we know from the methodology that in the case of the necessary relationship, the outcome is the

374 subset of the condition (i.e. the outcome cannot be present while the condition is absent). The
 375 Netherlands is the case that has low scores of membership in $\sim T$ (i.e. it tracks students), but still
 376 shows good results in educational efficiency and equity.

377 Despite the latter limitation, we conclude that the analysis of the necessary conditions has
 378 lent support to our hypothesis that the no-tracking condition is a necessary – but not sufficient –
 379 condition for a good educational policy mix. This leads us to the next step of the analysis –
 380 sufficient combinations of conditions to contribute to the outcome, where we control for the
 381 hypotheses indicated in equation (2).
 382



383
 384 **EFFICIENCY AND NO ON THE X AND Y AXES SHOULD HAVE A CAPITAL LETTER. PLEASE SUPPLY A**
 385 **CORRECTED FIGURE**
 386

387 Figure 2. 'No tracking' as necessary condition.
 388 Sources: OECD, 2010, authors' **OUR** Calculation.

389 *Sufficient Combinations of Conditions*

390 We are after the combinations of conditions which contribute to the outcome. Latter means that
 391 we are looking for the sufficient institutional features of educational systems that will produce a
 392 good outcome. This means that we examine cases with the same causal conditions to see if they
 393 also share the same outcome. The main steps of this part of fuzzy-set analyses are: (1) specifying the
 394 truth table, i.e. transforming fuzzy-set membership scores into combinations of causal conditions;
 395 (2) determining frequency threshold (i.e. establishing a rule for determining which combinations of
 396 conditions are relevant – based on the number of cases with greater than 0.5 membership in each
 397 combination); (3) determining the consistency threshold (significance in quantitative terms) – that
 398 is, the degree of validity of the argument that a given combination of conditions is sufficient for the
 399 outcome to occur (0.75 was suggested as a minimum level by Ragin, 2008); (4) analysis using
 400 Boolean minimisation, which is basically the reduction of complex expressions into shorter, more
 401 parsimonious formulas. We have to test separately both of our 'configure choice properly'
 402 hypotheses – that is, our competition and good management hypotheses. In both cases we have 32
 403 (2k, where k is the number of conditions included in the analyses) different combinations of
 404 conditions.

405 First we control for the 'competition hypotheses', equation (2.1). The first step is to show
 406 which combinations together with C and $\sim T$ are present, and for this, Table II was constructed. To
 407 improve readability we composes a typology of cases (column 'type' in Table II) and indicated

408 specific features of constructed types (column ‘specific’ in Table 2). It is clear that the criteria for the
 409 ‘competition hypothesis’ (i.e. the school systems which are based on public–private partnerships
 410 where the state grant applies equally to both) are met only in a few cases (Sweden and the
 411 Netherlands). These countries are also those which have extensive early childhood education
 412 systems. In addition, there are three choice cases (Denmark, England, Spain) that satisfy two of our
 413 three conditions (C and P are present, not T), and similarly there are four choice-intolerant cases
 414 (Hungary, Portugal, Germany, Austria) which have implemented an extensive private school
 415 system (P) but do not support the private system by equitable funding. However, Hungary and
 416 Denmark are the cases from these groups that display the outcome and whose success we are
 417 unable to explain. Additionally, there are six choice-intolerant cases which support private
 418 participation, but their share of private providers is low, though most of them are good cases
 419 (marked in bold). To conclude, Table II describes cases that are successful and satisfy our
 420 hypothesis completely or partially, but there are also cases that at least partially don’t support our
 421 hypothesis (Equation 2.1.); thus, we turn to the second step of hypothesis testing.
 422

configuration	country	type	specific
C*t*E*p*F	Sweden	choice-competition	
C*t*E*p*F	Netherlands		T
C*t*E*p*f	Denmark, England, Spain	choice-diversity	
c*t*E*p*f	Hungary, Portugal		
c*t*E*p*f	Germany	no choice-diversity	T
c*t*e*p*f	Austria		T
c*t*e*p*F	Czech, Finland, Slovakia	no choice-equitable funding	
c*t*E*p*F	Estonia, Norway, Slovenia		
C*t*e*p*f	Ireland	choice-no competition	
C*t*E*p*f	Italy		
c*t*E*p*f	Iceland	no choice-no competition	
c*t*e*p*f	Poland, Greece		

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424 Notes: The main argument behind ‘competition hypotheses’ – C*P*F→EFEQ **SENSE?**
 425 Cases which display the outcome are in bold. Small letters indicate ‘no’, i.e. c = no choice.
 426

427 Table II. Typology and cases based on configurations: ‘competition hypothesis’.
 428 Source: The overview of sources in Appendix 2.
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430 As the second step we test with the help of a truth table the analytical differences and similarities
 431 between cases (Table III). Truth tables are useful because, among other factors, they reveal the
 432 analytical differences and similarities between cases and indicate the degree of diversity in the data
 433 that is, they reveal which logically possible combinations of conditions are not observed empirically
 434 (Schneider & Grofman, 2006). Boolean algebra is used to minimise the truth table [6] to indicate
 435 the solution formulas (see Table VI). Following good practice and due to some drop in consistency
 436 level below 0.9, we chose 0.9 as the consistency threshold.
 437

C	E	P	F	number	EFEQ	consistency	cases
1	0	0	0	1	1	0.94	Ireland
1	1	1	1	2	1	0.93	Netherlands, Sweden
0	1	0	1	3	1	0.92	Estonia, Norway, Slovenia
0	1	1	0	2	1	0.84	Hungary, Portugal
1	1	0	0	1	1	0.83	Italy
0	1	0	0	2	1	0.82	Germany, Iceland
0	0	0	1	3	0	0.77	Slovakia, Finland, Czech
1	1	1	0	3	0	0.75	Denmark, England, Spain
0	0	0	0	3	0	0.63	Austria, Poland, Greece

438 Notes: C, E, P and F are the conditions **which WHOSE?** configurational causality we test. 1 and 0 indicate membership in
 439 a particular condition (e.g. if C = 1 then the membership score in particular condition is > 0.5). The overview of all
 440 membership scores is in Appendix 1.
 441

443 Table III. Truth table: competition hypothesis.
 444 Source: The overview of sources in Appendix 2.

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Table III demonstrates that the combination of C*P*F is sufficient in contributing to a good outcome; however, the empirical coverage is moderate (only two cases: the Netherlands and Sweden). The most representative type $\sim C^*E^*\sim P^*F$ has three cases. Thus, although our results are consistent, our main limitation is the low coverage (i.e. the **LOW** empirical relevance of configurations). This problem of limited diversity is unfortunately usual in mid-range case analyses, which we will also address later. Still, there are cases present that satisfy our consistency threshold and are consistent with our hypothesis – namely, the Netherlands and Sweden. Yet, there are additional paths to good policy outcome suggested by the truth table, the most representative one being $\sim C^*E^*\sim P^*F$. Finland drops out from this category due to the fact that condition E (enrolment in early childhood education at the age of three) is not met ($\sim E$). Only about 50% of Finnish children between 3 and 6 participate in publicly organised early childhood education; however, others have access to publicly financed private or home day-care. In the case of six-year-old children, the situation is, however, different, because almost all of them take part in free half-day preschool introduced in 2000 (OECD, 2006).

Second, we controlled for the ‘good management hypothesis’ (equation 2.2). Again we show the cases that represent certain combinations of conditions, and have created a typology based on these configurations (Table IV). It is shown that we have choice cases both with the properties of good management (AU*AC) and without. Again the Netherlands and Sweden appear as role models, in addition to England and Denmark. None of the successful (EFEQ > 0.5) ‘no-choice’ cases has the property of ‘good management’. There is one no-choice configuration ($\sim C^*\sim T^*\sim E^*AU^*AC$) with a ‘good management’ combination (AU*AC), but it does not obtain the outcome (Slovakia). At the same time, there are four cases with a good policy outcome (Estonia, Hungary, Iceland and Slovenia), which have no ‘accountability’ membership, accompanied by cases without ‘autonomy’ membership (Poland and Norway), that don’t support our hypothesis. From our analytical perspective these are probably the cases that take international policy recommendations seriously, but have not managed to develop a thorough policy mix for good management.

configuration	country	type	specific
C*T*E*AU*AC	Netherlands	choice - good management	T
C*t*E*AU*AC	Sweden, England, Denmark	choice - good management	
c*t*e*AU*AC	Slovakia	no choice - good management	
C*t*E*au*ac	Spain, Italy	choice - no good management	
C*t*e*au*ac	Ireland	choice - no good management	
c*t*E*AU*ac	Estonia, Hungary, Iceland, Slovenia	no choice - autonomy	
c*t*e*AU*ac	Czech	no choice - autonomy	
c*t*e*au*AC	Poland	no choice - accountability	
c*t*E*au*AC	Norway	no choice - accountability	
c*T*e*au*ac	Austria	no choice - accountability	T
c*t*E*au*ac	Portugal	no choice - no good management	
c*t*e*au*ac	Greece, Finland	no choice - no good management	
c*T*E*au*ac	Germany	no choice - no good management	T

474

475 Notes: The main argument behind ‘good management hypotheses’ – C*AU*AC→EFEQ **SENSE?**.
476 Cases which display the outcome are in bold. Small letters indicate ‘no’, i.e. c = no choice.
477

478 Table IV. Typology and cases based on configurations: ‘good management hypothesis’.
479 Source: The overview of sources in Appendix 2.
480

481 **Second, THIRD?** we composed a truth table (Table V) for testing ‘good management hypotheses’
482 (Equation 2.2). In this case our consistency threshold was 0.85 (again, this threshold is justified by
483 the QCA’s good practice **GUIDELINES** – 0.8 as the suggested minimum – and by the consistency
484 levels of particular analyses), that gives us 11 ‘good’ cases. Coverage was higher in this case than in
485 the previous case, and included mostly good outcome cases.
486

C	E	AU	AC	number	EFEQ	consistency	cases
0	1	1	0	4	1	0.97	Iceland, Estonia, Slovenia, Hungary
0	1	0	1	1	1	0.96	Norway
1	0	0	0	1	1	0.93	Ireland
0	0	0	1	1	1	0.87	Poland
1	1	1	1	4	1	0.86	Netherlands, Sweden, Denmark, England
0	0	1	0	1	0	0.81	Czech
0	0	1	1	1	0	0.80	Slovakia
0	1	0	0	2	0	0.73	Germany
1	1	0	0	2	0	0.70	Spain, Italy
0	0	0	0	3	0	0.59	Portugal, Greece, Austria

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487

488 Notes: C, E, AU and AC are the conditions **which WHOSE?** configurations we test. 1 and 0 indicate membership in a
 489 particular condition (e.g. if C = 1 then the membership score in particular condition is > 0.5). The overview of all
 490 membership scores is in Appendix 1.
 491

492 Table V. Truth table: good management hypothesis.
 493 Source: The overview of sources in Appendix 2.
 494

495 Table VI can be considered to show the final policy recommendations **as the results of**
 496 **STEMMING FROM** fsQCA that will lead to good policy outcomes. There are alternative paths
 497 towards a good educational policy outcome (EFEQ). Considering Ireland to be a deviant case, we
 498 found two sufficient configurations in the case of the ‘competition’ hypotheses, one with and one
 499 without choice; and three **SUFFICIENT CONFIGURATIONS** in the case of ‘good management’
 500 hypotheses, one with and two without choice.

501 Moreover, **DESPITE** having a large discussion and policy shift toward choice, we have
 502 shown that choice per se is not, however, sufficient for educational efficiency and equity. We
 503 propose and empirically show that other (combinations of) conditions are relevant too – not only
 504 ‘choice’ in combination with the ‘no tracking’ (our necessary condition) and ‘competition’ or ‘good
 505 management’ configurations. As Table VI indicates, there are no-choice systems with a variety of
 506 configurations that end up with a good outcome. Thus, choice is rather an INUS condition – an
 507 insufficient but non-redundant part of an unnecessary but sufficient condition.

508 Since the necessary condition (no tracking) is by definition unavoidable for the good
 509 outcome, we may add this condition to all combinations. The first configuration, $C^*E^*P^*F \rightarrow EFEQ$
 510 (Table VI), indicates that we find some evidence that ‘competition’ can lead to a good policy mix
 511 (Equation 2.1). However, there are only two cases – the Netherlands and Sweden – that give us
 512 empirical grounding. There are four case groups that provide evidence of good management
 513 (configuration $C^*E^*AC^*AU \rightarrow EFEQ$ – the Netherlands, Sweden, Denmark and England – though
 514 the latter is not a good outcome country). In the case of no-choice countries, there are countries
 515 with good outcomes that don’t contradict our hypothesis – Estonia, Norway, Slovenia, for
 516 instance, display good policy outcomes, while in terms of ‘competition’ hypotheses, neither C nor
 517 P is present. Similarly the in case of ‘good management’ hypotheses, Iceland, Estonia, Slovenia and
 518 Hungary only follow school autonomy in combination with other sufficient conditions, and two
 519 cases – Norway and Poland – only **FOLLOW** accountability in combination with other sufficient
 520 conditions.
 521

Solutions	CHOICE COUNTRIES / COMPETITION HYPOTHESES		NO-CHOICE COUNTRIES / COMPETITION HYPOTHESES	
	Formula	$C^*E^*P^*F$	$C^*\sim E^*\sim P^*\sim F$	$\sim C^*E^*\sim P^*F$
Type	choice competition	choice no competition	no choice no diversity	
Cases	Netherlands Sweden	Ireland	Estonia Norway Slovenia	
Raw cov.	0.34	0.22	0.42	
Unique cov.	0.11	0.13	0.19	
Consistency	0.93	0.94	0.92	
Solution coverage: 0.66				
Solution consistency: 0.89				
Solutions	CHOICE COUNTRIES / GOOD MANAGEMENT HYPOTHESES		NO-CHOICE COUNTRIES / GOOD MANAGEMENT HYPOTHESES	
	Formula	$C^*E^*AC^*AU$	$C^*\sim E^*\sim AU^*\sim AC$	$\sim C^*E^*AU^*\sim AC$
Type	choice good management	choice no good management	no choice autonomy	no choice accountability
Cases	Netherlands Sweden Denmark England	Ireland	Iceland Estonia Slovenia Hungary	Norway Poland
Raw cov.	0.39	0.2	0.35	0.32
Unique cov.	0.21	0.12	0.15	0.13
Consistency	0.86	0.93	0.97	0.91
Solution coverage: 0.84				
Solution consistency: 0.87				

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Table VI. Sufficient combinations **combinations sufficient** for the good outcome.

Source: The overview of sources in Appendix 2.

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Conclusively we found that the two hypotheses (Equation 2.1) and (Equation 2.2) are supported only in choice combinations – that is, the combinations argued in the literature as being complementary for a good policy mix turned out to be present in countries where choice and competition has been a clear policy direction. In other cases, neither the ‘competition hypotheses’ nor the ‘good management hypotheses’ found confirmation.

In terms of the explanatory quality of the solutions, the ‘competition hypotheses’ is marginally more consistent (the countries’ membership scores are better in the case of particular configurations), but the empirical coverage is less sound – we have explained 66% of our sample. On the contrary, in the case of good management the coverage is good – we explain 84% of cases, while the consistency is lower than before (87%). For a detailed overview of which countries’ educational success we are able to explain and which we cannot explain, see Appendices 3 and 4. To conclude, the overall quality in terms of consistency and coverage is not bad, although **unique coverage indicate to the idiosyncrasies, WE MUST ACKNOWLEDGE THE IDIOSYNCRATIC NATURE OF MANY OF OUR CASES – THAT IS, THE FACT** that almost every case has its own specificities. Also, the hypotheses are more suitable for explaining choice cases than for the no-choice cases, as expected.

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Conclusions

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The initial reforms of **CONCERNED WITH** school choice – voucher schemes of different kinds to support low-SES children’s attendance at private schools and the abolition of strict catchment areas – were mainly aimed at improving educational equity. Moreover, proponents of the freedom of parents to choose argue that choice is democratic because it has the potential to improve poor people’s access to quality education (e.g. Gorard et al, 2003). However, the empirical evidence is not always supportive of this equity-conducive argument. The NPM-inspired reforms and policies that introduce competition, choice and market forces into the school system have been shown to have a strong potential to shift school systems to a higher level of efficiency. At the same time, as highlighted in the school-choice context, the generally observed empirical outcome, noted across different disciplinary literatures and a range of methodological approaches, is that there are differences in outcomes **across DEPENDING ON** the social status of parents – that is, low-SES children go to ‘less good’ schools (e.g. Burgess & Briggs, 2006).

We conducted a comparative study of 20 European education systems to fill the research gap existing in the literature on comparing limited so-called medium *n* cases. Our aim was to integrate existing theoretical knowledge about good educational policy, and empirical evidence. By good policy, we mean institutional features of the policy mix for creating educational efficiency and equity simultaneously. For the empirical investigation, we found fuzzy-set analysis to be appropriate. Our analysis tested three hypotheses: (1) tracking is harmful (‘no tracking’ is a necessary condition); (2) the right configuration of choice policy entails ‘competition’ or ‘good management’ of schools; and (3) choice is neither a necessary nor a sufficient condition, but rather an INUS condition to good policy outcome.

Our results indicate that choice can be one of the conditions needed to produce the good policy outcome and in such cases choice is only one of the necessary conditions. However, there are other sufficient combinations of conditions where membership of a choice-set is not necessary. In addition, we found that ‘no tracking’ is (with some reservations concerning the Netherlands in particular) the necessary condition for a good outcome. The combinations argued in the literature to be complementary for a good policy outcome turned out to be sound only in countries where choice and competition have been clear policy directions (the Netherlands and Sweden mostly). In choice-intolerant cases, we were not able to show that ‘good management’ or ‘competition’ can bring about educational efficiency and equity. The countries with the best choice practices can be considered to be Sweden (good management and competition), Denmark (good management) and the Netherlands (good management and competition, but tracking). The Dutch experience is

575 interesting and exceptional due to many aspects. First, the twin principles of allowing parents to
 576 choose schools for their children and giving schools operational autonomy (i.e. the principle of
 577 freedom of education) is deeply embedded in the country's rhetoric. Pillarisation, **A SYSTEM**
 578 which means that both parents and schools are free to engage in the type of education that they
 579 choose and gain public support for these choices through an equalised funding formula (in
 580 Netherlands the school gets extra funding for admitting children from disadvantaged backgrounds),
 581 has somehow managed to include choice and pedagogical diversity within the education system
 582 without substantial segregation, and this explains the success in spite of the **tacking TRACKING**
 583 tradition.

584 Also we have demonstrated that there are multiple ways of configuring good policy. It is
 585 worth mentioning that many no-choice countries (e.g. Estonia, Poland, Slovenia) perform well.
 586 One such outstanding and well-known case is Finland. However, other similar types of policies that
 587 are intolerant of choice (e.g. in Slovakia and the Czech Republic) are not so successful. This
 588 indicates that our analysis suits hypothesis testing related to choice regimes, and no-choice regimes
 589 are currently simply empirical reminders **OF THIS FACT**. Thus, our findings also reveal that in a
 590 Europe-wide analysis, finding a common explanation for efficiency and equity is difficult. As the
 591 analyses have shown, many **solutions formula FORMULAIC SOLUTIONS** are based on only one
 592 or two empirical cases, and they tend to be more explanatory in the case of choice-tolerant systems.

593 Thus we have several limitations. First, although the levels of consistency are quite good, we
 594 are still not able to explain many cases – that is, there are plenty of successful cases (cases which
 595 show a positive outcome, Finland particularly), but the success is not explained by the analysis. The
 596 second limitation concerns the number of cases versus the number of possible configurations – that
 597 is, the problem of limited diversity. The first limitation is caused by country specificities that we are
 598 not able to control. For instance, it is argued that choice policies may work best where major
 599 equity problems have already been resolved – that is, despite the similarity of formal regulations
 600 concerning policy actions, the educational outcome is dependent on the societal context. The
 601 second limitation is related to the so-called limited diversity problem – that is, the more specifically
 602 we are willing to describe the policy mix, the more conditions we have to include in the analyses.
 603 Each extra condition in the analyses causes a powering effect of logically possible combinations ($2k$,
 604 where k is the number of combinations), which in turn challenges the opportunity of **FINDING**
 605 empirical matches. Thus, the analyses in QCA are always some sort of compromise between the
 606 simplification of research problems (in terms of describing dimensions) and empirical relevance.

607 Furthermore, the kind of structuralist approach applied in this particular article highlights the
 608 aspects related to formal institutions only and limits the definition of institutions more broadly due
 609 to rules of the game that develop in certain contexts. However, we are optimistic that digging
 610 deeper into the cases and finding the roots of values, norms and historical path-dependencies will
 611 add to the knowledge base by better explaining the diversity of educational policies.

612 Notes

- 613 [1] In fuzzy-set QCA, what we call conditions are independent variables in the classical approach, and
 614 outcome is the dependent variable.
- 615 [2] INUS condition means that this is an insufficient but necessary part of an unnecessary but sufficient
 616 combination of conditions.
- 617 [3] In fuzzy-set QCA, instead of 'combinations' the term 'configuration' is often used to refer to the
 618 arrangement of the conditions (not all have to be included) that take a certain value (between 0 and
 619 1) **that allows a logical algorithm to be run based on tests using Boolean algebra. CORRECT AS**
 620 **EDITED?**
- 621 [4] A good outcome is the score obtained by the Boolean multiplication of educational efficiency and
 622 equity scores that is above the 0.5 threshold. The closer the score is to 1, the more ideal the outcome
 623 of the policy mix is.
- 624 [5] Negation can be expressed either by tilde **EXPLAIN TILDE? SHOULD IT READ 'A TILDE?'** or by
 625 **small LOWERCASE?** letters, as occurs later on in the analyses.
- 626 [6] Boolean minimisation is the reduction of a long, complex expression into a shorter, more
 627 parsimonious expression. Logical AND or intersection (*) refers to the combination of sets – that is,

628 the combination of conditions leading to the outcome. For minimisation, the researcher needs to
 629 decide what level of consistency is high enough to code the outcome as present, with consistency
 630 being the degree to which cases sharing a given combination of conditions agree in displaying the
 631 outcome (Ragin, 2008). Coverage indicates the empirical importance – the number of cases following
 632 a specific causal path to the outcome divided by the total number of instances of the outcome (Ragin,
 633 2008).

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 706 **URL?**

707 **APPENDIX 1**

708 **Data**

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CASES	choice	tracking				early childhood edu		private		public money in private		autonomy		accountability		outcome		
	C	AG	AG_cal	S	T_aver age	E	E_cal	P	P_cal	F	F_cal	AU	AU_cal	AC	AC_cal	EF	EQ	EF*EQ
Austria	0.33	15.4	0.31	1	0.655	0.61	0.17	8.4	0.35	0.5	0.18	-0.61	0.04	0.06	0.02	0.19	0.45	0.19
Czech Republic	0	15.4	0.31	0.67	0.49	0.6	0.15	6	0.18	0.62	0.55	1.12	0.98	0.31	0.25	0.35	0.34	0.34
Denmark	0.67	2	0.04	0	0.02	0.87	0.93	13.5	0.67	0.59	0.46	0.18	0.76	0.45	0.68	0.69	0.96	0.69
England	0.67	3	0.05	0.33	0.19	0.83	0.88	21.3	0.91	0.28	0.01	0.83	0.96	0.8	1	0.72	0.39	0.39
Estonia	0.33	26.8	0.8	0	0.4	0.88	0.94	3.7	0.09	0.89	0.95	-0.04	0.62	0.32	0.28	0.94	0.65	0.65
Finland	0.33	0.8	0.03	0	0.015	0.47	0.02	7	0.25	0.98	0.98	-0.39	0.19	0.03	0.01	1	0.95	0.95
Germany	0.33	43.5	0.99	1	0.995	0.89	0.95	7.1	0.25	0.5	0.18	-0.53	0.08	0.11	0.03	0.91	0.33	0.33
Greece	0	0	0.03	0.33	0.18	0.53	0.05	6.1	0.19	0.5	0.18	-0.77	0.01	0.31	0.25	0.01	0.44	0.01
Hungary	0.33	3	0.05	0.67	0.36	0.72	0.57	13.1	0.65	0.5	0.18	0.82	0.96	0.33	0.3	0.59	0.56	0.56
Iceland	0.33	0	0.03	0.33	0.18	0.95	0.98	8.6	0.37	0.56	0.35	-0.06	0.6	0.23	0.12	0.63	0.53	0.53
Ireland	1	11.6	0.19	0.33	0.26	0.65	0.29	0.6	0.03	0.5	0.18	-0.42	0.16	0.19	0.07	0.75	0.85	0.75
Italy	0.67	19.6	0.48	0.33	0.405	0.93	0.97	6.9	0.24	0.25	0.01	-0.65	0.03	0.3	0.23	0.17	0.94	0.17
Netherlands	1	76	1	1	1	1	0.99	76.4	1	1	0.98	1.3	0.99	0.64	0.97	0.97	0.72	0.72
Norway	0	1.6	0.04	0	0.02	0.95	0.98	4.4	0.11	0.95	0.97	-0.23	0.44	0.58	0.94	0.73	0.66	0.66
Poland	0.33	14.1	0.26	0.33	0.295	0.46	0.01	6.4	0.21	0.5	0.18	-0.36	0.23	0.53	0.88	0.75	0.89	0.75
Portugal	0	1.9	0.04	0.33	0.185	0.73	0.61	17.4	0.81	0.55	0.32	-0.44	0.14	0.3	0.23	0.32	0.51	0.32
Slovakia	0.33	7.3	0.1	0.33	0.215	0.6	0.15	8.8	0.39	0.97	0.98	0.5	0.89	0.63	0.97	0.24	0.37	0.24
Slovenia	0.33	0	0.03	0.33	0.18	0.81	0.84	8.6	0.37	0.65	0.62	-0.13	0.55	0.36	0.38	0.68	0.56	0.56
Spain	0.67	1.1	0.03	0.33	0.18	0.99	0.99	30	0.98	0.35	0.02	-0.47	0.12	0.08	0.02	0.11	0.61	0.11
Sweden	0.67	0.6	0.03	0	0.015	0.9	0.95	10.6	0.53	1	0.98	0.81	0.95	0.61	0.96	0.58	0.86	0.58

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711 Notes: _cal stands for calibrated values (e.g. E_cal stands for calibrated value of the participation rate of early childhood
 712 education). Calibration method and thresholds are indicated in Appendix 2 (last column).
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Source: The overview of sources in Appendix 2.

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APPENDIX 2.
Description of the Data (Condition and Outcome Sets): sources and thresholds for calibration

	Condition	Measurement	data source	calibration
competition	freedom to choose (C)	parental freedom to choose the school (1-free choice; 0.67-regulated choice; 0.33 - students allocated to schools according to where they live, but parents may choose an alternative, 0-strictly catchment area based) primary school	EURYDICE 2012	four-value fuzzy set (Rihoux, Ragin 2009)
	considerable amount of private providers (P)	the availability of considerable amount of private providers in country (distribution of students attending private government-dependent and private, ISCED 1-3) independent schools)	EURYDICE 2012	continuous calibration; direct method; thresholds 25, 10, 2
	public money in private system (F)	the proportion of public money in the private system - ratio of public expenditure per student in private / in public	OECD 2012	continuous calibration; direct method; thresholds 0.95; 0.6; 0.4
tracking	tracking (T)	the tendency of schools to group children by ability (two sub-measures - ability grouping (PISA 2009 students questionnaire) and streams (EURYDICE; 0 - single structure; 0.33 common core; 0.67 - mixed; 1 - differentiated); the average of these two sub-components included into the analyses	PISA 2009 (ability grouping AG), EURYDICE 2012 (streams S)	AG - continuous calibration; direct method; thresholds 40; 14; 2; S - four-value fuzzy set; T = Average of AG and S
early childhood education	the enrolment in early childhood education (E)	the countries' enrolment rates in early childhood education at the age of three	OECD 2012	continuous calibration; direct method; thresholds 0.9; 0.7; 0.53
management	autonomy (AU) - the degree of freedom of schools to decide on resources	the practice of school's governing board having the considerable responsibility for allocating resources to schools (appointing and dismissing teachers, establishing teachers' starting salaries and salary raises, formulating school budgets and allocating them within the school; index)	PISA 2009	continuous calibration; direct method; thresholds 0.8; -0.2; -0.6
	accountability (AC) the assessment and accountability policies	the tendency to publish achievement data (league tables)	PISA 2009	continuous calibration; direct method; thresholds 0.6; 0.4; 0.15
EFEQ	Outcome EF-EQ	Efficiency of education system (PISA combined score); thresholds 515, 493, 480 Equity of education system (family background effect); thresholds 24, 15, 0 Equal educational opportunities (PISA in reading); thresholds 0.37, 0.3, 0.24	PISA 2009 Shuetz et al. 2009 Ferreira et al. 2011	all components calibrated, direct method; equity - average of two equity calibrated components; outcome EF ja EQ combined by minimum rule

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All headings and statements should begin with a capital letter. Also, the following need correcting:

Enrolment (2nd column, 6th row) should be spelt enrolment

One of the dashes in 3rd column, 1st row is spaces while the others are not, and what does 'primary school' relate to in this cell

It should be 'considerable number', not 'considerable amount' in 2nd and 3rd columns

There are two closing brackets in 3rd column, 3rd row

Analyses is spelt incorrectly in 3rd column, 5th row, and students should be students'

Tables is spelt incorrectly in 3rd column, 8th row

Text does not fit the cell in 3rd column, 9th row

PLEASE SUPPLY A CORRECTED TABLE, PREFERABLY AS A WORD DOCUMENT SO THAT ANY FURTHER MISTAKES CAN BE CORRECTED BEFORE PUBLICATION

750 APPENDIX 3
 751 Membership Scores: ‘competition hypotheses’,
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Country	C*E*P*F	C**E**P**F	~C*E**P*F	EFEQ
Austria	0.17	0.33	0.17	0.19
Czech Republic	0	0	0.15	0.34
Denmark	0.46	0.07	0.33	0.69
England	0.01	0.12	0.01	0.39
Estonia	0.09	0.05	0.67	0.65
Finland	0.02	0.02	0.02	0.95
Germany	0.18	0.05	0.18	0.33
Greece	0	0	0.05	0.01
Hungary	0.18	0.33	0.18	0.56
Iceland	0.33	0.02	0.35	0.53
Ireland	0.03	0.71	0	0.75
Italy	0.01	0.03	0.01	0.17
Netherlands	0.98	0.01	0	0.72
Norway	0	0	0.89	0.66
Poland	0.01	0.33	0.01	0.75
Portugal	0	0	0.19	0.32
Slovakia	0.15	0.02	0.15	0.24
Slovenia	0.33	0.16	0.62	0.56
Spain	0.02	0.01	0.02	0.11
Sweden	0.53	0.02	0.33	0.58

Notes: we explain
 we are not able to explain

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 754 Sources: authors’ **OUR?** analyses.

755 Appendix 4.
 756 Membership Scores: good management hypotheses,

Country	C*AC*AU*E	C**AC**AU**E	~C**AC*AU*E	~C*AC**AU	EFEQ
Austria	0.02	0.33	0.04	0.02	0.19
Czech Republic	0	0	0.15	0.02	0.34
Denmark	0.67	0.07	0.32	0.24	0.69
England	0.67	0	0	0.04	0.39
Estonia	0.28	0.06	0.62	0.28	0.65
Finland	0.01	0.33	0.02	0.01	0.95
Germany	0.03	0.05	0.08	0.03	0.33
Greece	0	0	0.01	0.25	0.01
Hungary	0.3	0.04	0.57	0.04	0.56
Iceland	0.12	0.02	0.6	0.12	0.53
Ireland	0.07	0.71	0	0	0.75
Italy	0.03	0.03	0.03	0.23	0.17
Netherlands	0.97	0.01	0	0	0.72
Norway	0	0	0.06	0.56	0.66
Poland	0.01	0.12	0.01	0.67	0.75
Portugal	0	0	0.14	0.23	0.32
Slovakia	0.15	0.03	0.03	0.11	0.24
Slovenia	0.33	0.16	0.55	0.38	0.56
Spain	0.02	0.01	0.12	0.02	0.11
Sweden	0.67	0.04	0.04	0.05	0.58

Notes: we explain
 we are not able to explain

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 758 Sources: authors’ **OUR?** analyses.
 759

- 760 **TRIIN LAURI** is a doctoral student in government and politics at the Institute of Political Science
761 and Governance, Tallinn University, Estonia and a lecturer in social policy and economics.
762 **HIS/HER?** research and teaching interests are: public policy, educational governance,
763 contemporary welfare states and school choice. *Correspondence:* triin.lauri@tlu.ee
764
- 765 **KAIRE PÕDER** is a senior research scientist in the Department of Economics, Tallinn University
766 of Technology, Estonia. **HIS/HER?** research and teaching interests are: institutional economics,
767 mechanism design and school choice. *Correspondence:* kaire.poder@ttu.ee