

School Choice and Educational Returns in the EU: With a Focus on Finland and Estonia¹

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Abstract: *The article discusses latent school choice developments in the two neighboring countries, Finland and Estonia, investigating the impact of school choice regime on educational returns. To support the discussion we conducted a comparative study of 21 education systems in Europe and explored whether there might be an association between educational returns and the extent of school choice and equal educational opportunities. Educational returns are operationalized by the PISA 2009 country level score, school choice and unequal educational opportunities indices are constructed by applying the first principal component over multiple variables.*

Keywords: *education reform, Estonia, Finland, PISA 2009, school choice*

1. Introduction

School choice and academic achievement are widely discussed in academic literature starting from Friedman (1962; 1955). However, the distribution of students amongst schools aiming at the equality of educational opportunity is more recent (Hanushek & Woessmann, 2010; Woessmann *et al.*, 2009; Woessmann, 2006). Here and elsewhere school choice is defined as the parents' possibility to choose school for their children. Scandinavian countries (especially Finland), which rely on catchment area based admission policies rather than on choice, are positioned relatively high in an EU comparison of the PISA test results. Contrarily, post-Soviet countries, including Estonia, are more school

¹ This paper is supported by Estonian Science Foundation grant no. SF0140059s12.

choice inclined, and their PISA results are also more diverse. Thus, we study the association of choice and educational returns. We test whether choice has any effect on the PISA results in the data of 21 EU countries. Our main emphasis is on two cases: Finland and Estonia. In both countries, school choice is applied to a different degree, but it is gradually evolving to the system where ‘schools are selecting students and families’. How can this phenomenon be explained and what role do school choice, equal educational opportunity and resources devoted to education play?

Comparative literature on the subject is comprehensive. There is an increasing number of papers using the international comparative perspective on education policy: including school choice (Hanushek & Woessman, 2010; Cobb & Glass, 2009; Schuetz *et al.*, 2008; Fuchs & Woessmann, 2007; Woessmann, 2005; 2004; Hanushek & Woessmann, 2005), numerous comparative small-n case studies (e.g., Klitgaard, 2007; Willmore, 2008; West & Ylönen, 2009; Teelken, 1999) and single cases (Böhlmark & Lindahl, 2007; Bukowska & Siwinska-Gorzalak, 2011; West, 2006, Riedel *et al.*, 2009; West *et al.*, 2009). However, as to the effect of choice on the quality of schooling, some evidence is found to support the argument (Woessmann *et al.*, 2009; Cobb & Glass, 2009; Levin, 1998) or the effects are mixed (Lubienski & Lubienski, 2006; Hill, 2005) and not very supportive (Böhlmark & Lindahl, 2007). At the same time, the negative segregation effects of school choice are shown in many cases, for instance in Argentina (Narodowski, 2002), Germany (Riedel *et al.*, 2009), various US cities (Lankford & Wyckoff, 2001; Bifulco *et al.*, 2009), England (West, 2006; Burgess *et al.*, 2006), and Finland (Seppänen, 2006; 2003). These authors indicate that choice increases ethnic and social segregation that can generate even more social costs than residential segregation.

School choice has not been a prominent topic in educational research in Estonia, resulting in a limited number of studies (e.g., Pöder & Kerem, 2012; Pöder, 2012; Strenze, 2008; Tambet, 2008). In Finland, however, there are several studies (Poikolainen, 2012; West & Ylönen, 2009; Seppänen, 2006; 2003; Kivinrauma *et al.*, 2003; Hirvenoja, 1999) which analyze changes in education policies since the 1990s, simultaneously touching upon school choice. Most of this literature rather indicates the negative aspect of choice to average educational returns and their distribution. However, there is no comparative literature on the topic available.

Having centralized path-dependent legacies of the education system is common to both case countries, which are similar also language-wise. In addition to the PISA accolade that Finland and Estonia share, there are some other

similarities in education policy. First, the private or independent providers have an insignificant role in the basic education system. Second, a huge part of the decentralized education policy, for example school choice, is put in the hands of local authorities. The latter justifies our emphasis on Finland's and Estonia's capitals Helsinki and Tallinn. However, there are dissimilarities. In addition to the different scopes of financing and the competitive nature of professional teacher education, it is important to stress that there is less educational streaming and no nation-wide standardized testing in Finland.

We are proposing a comparative cross-country research design with a focus on two cases. For qualitative and regression analysis we use the PISA 2009 database, from which data on 21 European countries is obtained. By using twelve different measures we compose the school choice index as a first principal component. Similarly, seven variables are used to compose an unequal educational opportunities index and three variables for the school resources index. Ordinary least squares (OLS) method is executed for statistical analysis, measuring the conditional marginal effects of composed indices to the PISA 2009 results.

The paper is organized as follows. Section 2 gives an overview of the literature about how choice agenda comes into play in our two cases—Estonia and Finland. A historical overview of school choice practices and changes after the amendment of policy paradigms after the 1990s are given in this section. The results of empirical research are presented and analyzed in Section 3. In this section we combine indices of school choice, equal educational opportunities and resources to schools to control the effect of school choice to educational returns. Finally, in Section 4 we conclude by giving an outlook for future policy and research agenda.

2. How choice affects educational returns: literature about the two cases

Most cross-country studies about school choice (Hanushek & Woessmann, 2007; Woessmann *et al.*, 2009; Fuchs & Woessmann, 2007; Woessmann, 2004) indicate that primary objectives of a 'good' educational policy should focus on choice, accountability and incentives. At the same time, in Finland policy objectives stress equal opportunities, broad knowledge and professionalism instead. Association between more choice and better performance is open to dispute. However, the results of educational production function approach,

enriched by disaggregated data (e.g., Woessmann *et al.*, 2009; Sprietsma, 2006), indicate that school choice and accountability seem to play a small but significant role in improving student performance. Can these results be questioned in light of the idea of “skimming the cream”? Do choice schools perform better at the expense of others by taking only the top students or are they just better schools? Aggregating results on a national level might give an answer to this question. In cross-country analyses, this selection bias can be avoided with aggregating results, because all types of sorting and selection issues at the individual level are eliminated at the system level. However, case specific analysis can enrich empirical findings. Thus we describe the recent developments in our two cases, highlighting institutional and path-dependent features of school choice regimes.

2.1. Comprehensive school and gradual legal change toward more choice: Helsinki, Finland

In Finland, the comprehensive school system creating equal opportunities was established in the 1970s. According to this, children were assigned to schools for nine years² on the basis of their place of residence and/or ethnicity. The allocation procedure was centralized. Education was strictly uniform and highly inclusive. However, an extensive decentralization program began from the 1980s onwards. The changes toward school choice have developed gradually during the 1990s along with education policy amendments. This clear move in a neo-liberal direction included parental choice and diversity of schools (West & Ylönen, 2009). Most larger cities in Finland have introduced school choice since 1994. School choice is used only in addition to the traditional allocation of pupils to schools according to the catchment area. Choice introduced a new phenomenon—specialized classes—which means that schools started offering different curricula for building their reputation. According to the 2005 Finland’s Ministry of Education Report, 20 per cent of classroom hours are reserved for freely chosen elective subjects.

The new legislation of education that came into force at the beginning of 1999 has legalized the prevailing education policy (Hirvenoja, 1999). The Basic Education Law of 1998 laid down two principles: ‘the principle of the neighboring school’ (emphasizing the right to go to a local school over the right to a free choice of school) and ‘the principle of undivided comprehensive tuition’ (which meant to break the traditional administrative division between the six-

² Children go to school at the age of seven. Officially there is a single structure education; however, after four years of primary school there may be some tracking to the lower secondary education.

year primary school and the three-year lower secondary school). The idea was to develop the Finnish comprehensive school system as an administrative and pedagogical whole. However, because of decentralization, these principles have been implemented in very different and even conflicting ways on the municipal level. Thus it may be said that this amendment ratified school choice in Finland, offering families an opportunity to express a preference for a school. The term 'school choice' is absent in education law, but it is mentioned in the argument section (*Education legislation*, 1999, pp. 223–224). After legal amendments, municipalities and schools became more autonomous than ever during the last 40 years in the history of comprehensive schooling. Also the deep economic recession gave certain impetus to decentralization (Hirvenoja, 1999, p. 8). Cutbacks in education were easier to accomplish at the local level. However, by the end of the 1990s, the strict norm steering that was implicated during building up a comprehensive system was replaced by goal steering. Centralized evaluation has emerged as a new steering mechanism. Thus it may be said that the Finnish school system changed from being one of the most centralized to becoming one of the most decentralized.

Helsinki introduced school choice among the first year of primary school in 1994. The main choice has to be made at the beginning of primary education, later also at the age of twelve, when transferring to lower secondary education. In Helsinki the use of ability tests to specialized classes is wide and justified by the 1998 Basic Education Act. However, the municipality can decide that priority is given to local children. With the introduction of school-based curricula, schools were encouraged to develop diversity through specialization in certain subject areas. These specialized or "emphasized" classes allowed school choice within a few classes in the school. Specialization means having more classes in music, sports, science, languages, or arts than is required by the national curriculum. In Helsinki, eleven schools could be considered 'elite schools'.³ These schools (27% of the total) can be regarded as highly in demand, with more than three students competing per seat (Seppänen, 2003). These schools are located in the city center, they are former grammar schools and the oldest in the city (founded at the turn of the 18th century). All of them offer many specialized classes.

In cities (also outside Helsinki), local authorities have assisted the emergence of school competition. In city centers where most popular specialist profile schools are situated the catchment areas are small enough for allowing the selection of students. In Helsinki in 2002, out of all the children entering the secondary stage at the age of 12/13, about half had requested other than their local allocated

³ In addition to these there are ten private schools with no catchment area, which accept approximately 10% of the students (Seppänen, 2003).

school as their preferred school (Seppänen, 2003) and this trend was growing annually. Seppänen (2003) also showed that these were largely middle-class children exercising their ability to choose, and popular schools were able to select from among the advantaged students. Seppänen (2006) indicated that this ability to choose has increased socio-economic segregation in the schools of Helsinki.

According to Hirvenoja (1999), 12 per cent of first-grade applicants choose the school with a success rate of 80 per cent. Active choosers were mainly from among middle-class families (Hirvenoja, 1999, p.10). This is explained by the endurance of middle-class concerns about education as a positional good.

Differently from most European cases, there is no central or national testing program, nor are there any national ‘league tables’⁴ for schools (West & Ylönen, 2009). During the last decade the schools’ evaluation system has changed from norm steering to steering by outcome, emphasizing that evaluation is an essential means to guarantee quality and national comparability (Kivirauma *et al.*, 2003). However, a recent High Court ruling made school performance results—average grades and destinations of pupils graduating from compulsory education—public (Kivirauma *et al.*, 2003, p. 5). The media has also carried out nationwide comparisons between the average grades of school leaving certificates, and thus identified the ‘best’ and the ‘weakest’ schools in Finland. Also, most of the cities have promoted school choice by publishing information brochures about the schools. The schools organize information evenings for parents before choices have to be made (Seppänen, 2003).

Consequently, a number of small legal changes constitute a completely new education policy (Kivirauma *et al.*, 2003). The emerged regional educational inequality has been even called ‘a triumph for urban Finland’ (Kivirauma *et al.*, 2003, p. 18). Thus, we are interested in whether these choice-oriented changes reflect improvements of educational returns, or vice versa.

2.2. Post-Communist legacies and ‘hidden’ school choice: Tallinn, Estonia

During the Soviet period, children were traditionally assigned to public schools according to where they lived. Even under this strict system, which continued to exist until the early 1990s, there was some choice. There were schools or specialized classes that carried out aptitude tests at admission. Even then over-demanded or elite schools existed. These schools did not fit under the typological

⁴ By league table we mean publicly available ranking of schools according to some performance criteria, e.g. state exam scores, PISA test results or similar.

or historical definition of elite school (Gaztambide-Fernández, 2009), but were public schools with a high status, highly selective admissions, and usually a favorable location and premises. After the early 1990s, the ‘inherited’ system became more diverse. Legal amendments coming along with liberalization, gave parents the right to choose a school. However, the schools were obliged to ensure a study place for each student inside the catchment area, although parents had an opportunity to choose a school if there were vacancies in the school they wished their child to attend (*Basic Schools and Upper Secondary Schools Act*, 1993). In addition, Tallinn, the capital of Estonia, has been using simultaneously both *inter-district* and *intra-district* school choice practices since 1993. This distinction basically followed the patterns of over- and under-demanded schools. So, even though the main principle of the school system was to fill the schools with students from a specific catchment area, there were and are municipal policies that allow some comprehensive schools to select the students. Similarly to the Finland’s case, the selection is still usually justified by special studies (‘specialized classes’).

The Soviet legacies continued to persist. The primary school⁵ admission mechanism to the over-demanded elite schools (eight schools in the city center, constituting 14% of the Tallinn schools) has no explicit procedures. All these schools run entrance tests. Admission requirements are unknown or school-specific, meaning that there is no governance over the admission rules. Inter-district schools have an additional admission criterion—the family must show a registered address inside the catchment area, which creates manipulation with addresses. Parents’ complaints about the asymmetric division of information about test requirements have created a new demand-driven phenomenon—preparatory preschools (hereafter, prep schools). These prep schools are courses offered for money and lasting for almost a school year, at which student candidates are being “drilled” for the school’s entrance tests. A study by Kukk and Talts (2009) showed that the ideology that could be called ‘the cult of success’ is shared among parents in general and thus parents are more than willing to let their children attend prep schools in addition to the public preparatory courses offered in kindergartens. In some cases it goes to such extremes as some parents enrolling their child(ren) in more than one prep school or employing private tutors from elite schools. Children are thus pre-trained in ‘measurable skills’ like mathematics, reading and writing, with less or no attention paid to social skills (Koop, 2006).

⁵ Children go to school at the age of seven; primary school lasts for four years, but because of the single structure there is no selection between primary and lower secondary education.

Our survey of parents⁶ shows that the probability to be admitted in an elite school is 50 per cent higher for a child who attended prep school compared to a child who was not pre-trained. However, admission is still a lottery as only 30–50 per cent of prep school attendees are accepted to the elite school, and due to the increasing competition, these numbers decrease on annual bases. Approximately five to eight children compete for one seat in an elite school. Our pilot study indicates that 76.7 per cent of the students who were accepted to elite schools had additionally trained themselves in prep schools for the entrance tests. On average, each child takes entrance tests in two schools, but in some extreme cases, children took entrance tests to six schools. We found evidence that 85 per cent of the active participants in the so-called school choice preferred the top five schools in Tallinn.

This type of ‘hidden’ school choice is enforced by public provision of information. The ‘league table’ scores achieved at central state-organized exams are published on an annual basis. In these score tables, all oversubscribed schools position themselves in the highest ranks.

The school choice system in Tallinn seems to lead to the system of ‘schools selecting students’ or even ‘schools selecting parents’. Similar trends were already described a decade ago (Helemäe *et al.*, 2000). Our pilot study indicates that 84.5 per cent of mothers and 68.3 per cent of fathers of the students in elite schools have higher education. Their socio-economic status is also high—more than 70 per cent of the parents belong to the highest social class. In addition, physical access to these schools might be a restrictive factor—as our study shows, 66 per cent of primary school students from elite schools have no access to public transportation which would guarantee them getting to school within a reasonable time, and thus parents or guardians drive them to school. In many cases, personal transport is connected with white-collar jobs in the central area of the city.

In general, the current mechanism in the urban community can be described as a market-like mechanism (but not entirely quasi-market mechanism), because there is no transparent admission policy (there are school-specific entrance tests without clearly stated prior requirements) and “cream skimming” of students. Consequently, a liberal and decentralized school choice system puts a certain cost on parents, is segregating society, and can in the long run affect educational returns revealed in the lower PISA results.

⁶ Data available by request from the authors.

3. School choice and educational returns: empirics

Our data originate from PISA 2009 dataset. The PISA 2009 test is a large-scale cross-country comparative test of students' achievement, conducted by OECD. There are 65 countries participating in the testing. In Estonia 4,727 and in Finland 6,415 fifteen-year-old students participated in the tests, creating nationally representative samples. In PISA, the primary sampling unit are schools, thus individual students are nested to peer groups, these to schools, and schools to communities. The PISA database combines individual student-level performance data in mathematics, science and language with extensive information from background and school questionnaires. Due to limited degrees of freedom in system level analysis we are combining data into three categories (Table 1). Sample characteristics provide information about the combined PISA score (average of reading, mathematics and science scores) highlighting our cases of Finland and Estonia.

Finland's PISA scores outperform all of our 21 (or 22, if we include also France) cases. However, Estonia is also doing relatively well, being above the OECD average. Looking at school choice indicators we can see that major differences between our cases are determined by the scope of choice. In Finland, more than 40 per cent of students indicate that they have no choice of school, and there is almost no admittance by academic records, while in Estonia similar indicators are less than 20 per cent and less than 30 per cent, respectively. So, Estonia with its above the average choice indicators are describing some kind of a choice model, whereas Finland's 'choice policy' is still based on catchment area. Huge differences concern also standardized testing and league tables (public achievement data). As mentioned, the Finnish model somewhat opposes choice and accountability advice given by most of choice policy oriented academic literature.

At the same time there are no tremendous differences between the average and our two cases in equal educational opportunities indicators. Finland has relatively less immigrants, smaller income inequality, and less students with lower than OECD ESCS index.⁷ As far as resources devoted to educational procedure are concerned, Finland outperforms the mean results in all categories

⁷ The PISA index of economic, social and cultural status (ESCS) was created on the basis of the following variables: the International Socio-Economic Index of Occupational Status; the highest level of education of the student's parents, converted into years of schooling; the PISA index of family wealth; the PISA index of home educational resources; and the PISA index of possessions related to "classical" culture in the family home. Index value 1 determines the OECD average.

and is far above the respective Estonian figures. However, as Appendix 1 (see p. 85) indicates, this resource gap is not that imminent in all cases; for example, France has higher expenditures per student but relatively poor PISA results.

Table 1. Sample characteristics

Variable	Mean	S.D.	Estonia	Finland
PISA (22 EU countries*)	493	24	514	544
Pisa OECD average	500	100		
<u>School choice indicators (% of students):</u>				
with 3 or more choices	58.4	16	57.5	43.9
with 2 options	17.0	5	23.7	13.6
no choice	24.6	15	18.8	42.5
admitted by catchment area	52.5	21	57.6	74.5
admitted by academic record	13.3	18	26.8	0.8
grouped by ability	52.5	19	44.2	56.2
not grouped by ability	38.2	20	43.8	42.5
in public schools	87.7	18	97.1	96.1
in government-dependent schools	10.8	17	2.3	3.9
in independent private schools	1.8	1	0.6	0.0
assessed by standardised tests	22.1	21	17.2	1.5
in schools with public achievement data	34.9	22	32.3	2.5
<u>Equal educational opportunities indicators:</u>				
Gini index	29.9	4	36.0	27.0
Pisa ESCS index	1.1	0.27	1.2	1.4
immigrant background (% of students)	7.2	5	8.0	2.6
ESCS index below 1 (% of students)	12.1	9	6.7	3.9
no pre-primary school attendance (% of students)	8.2	8	10.3	5.0
with disadvantaged SES (% of students)	24.7	6	20.2	15.9
with advantaged SES (% of students)	24.5	4	24.9	21.6
<u>School resources indicators:</u>				
teachers (15 years of experience) salaries to GDP per capita	1.01	0.61	0.29	1.07
expenditure per student (6-15 years)	68788	20910	43037	71385
GDP per capita (2007, PPP, USD)	31713	9316	20620	35322

Note: All data from the PISA 2009 database, only GDP and the Gini index data from Eurostat.

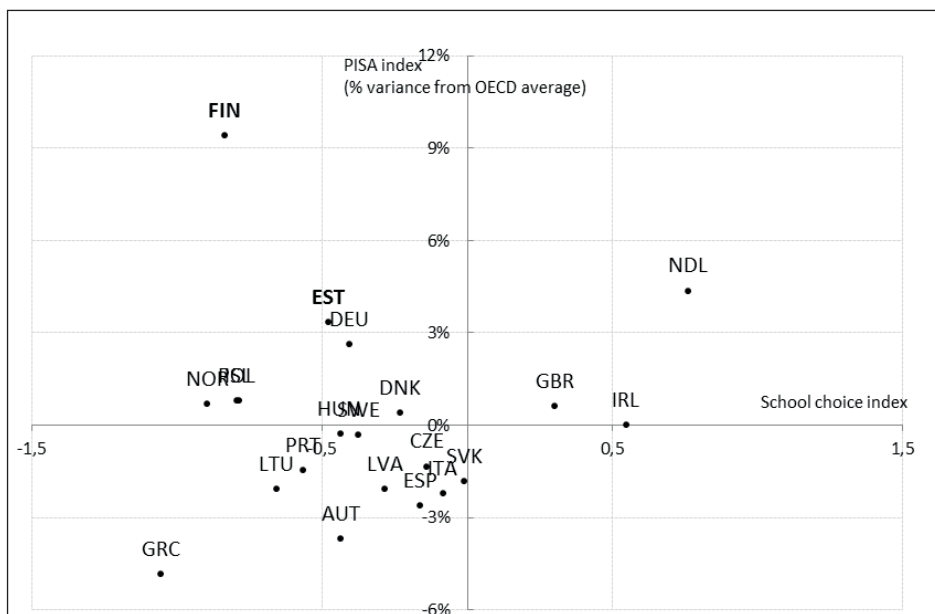
* The total sample size was 22 countries (see Appendix 1), missing data on school choice indicators in France, thus France is excluded from the PCA analysis.

As an empirical strategy we apply simple OLS regressions to control the impact of school choice to educational returns measured by the average PISA score by country. We are aware that cross-country analyses with 21 observations have many technical shortcomings. Problems accompanying the limited degrees of freedom and inaccessibility of panel data will not allow our cross-country comparative study to control the effect of the omitted variables, such as institutional path-

dependency and cultural factors, such as religious path or different types of public service discussed by political scientists (Le Grand, 2003; Robenstine, 2001). However, for multilevel analysis we constructed indices (see Appendix 2 on p. 86) to incorporate more variables into the analysis.

For analytical purposes we constructed a school choice index (Fig. 1) by using our twelve measures of school choice from Table 1. The first principal component was used to aggregate data to the index, which explains 35 per cent of the variability in the data. Expected signs in the indexes are also depicted in Appendix 2 to indicate only one controversy—students who have only two options of schools are not considered significant in the index. It can be explained by laying more emphasis on other positive choice-related criteria. At the same time, the percentage of students having three or more choices and those admitted by the catchment area are mutually exclusive. Measures of ‘no school choice’ and ‘percentage of students in public school’ have the greatest impact on the index.

Figure 1. School choice index and PISA scores

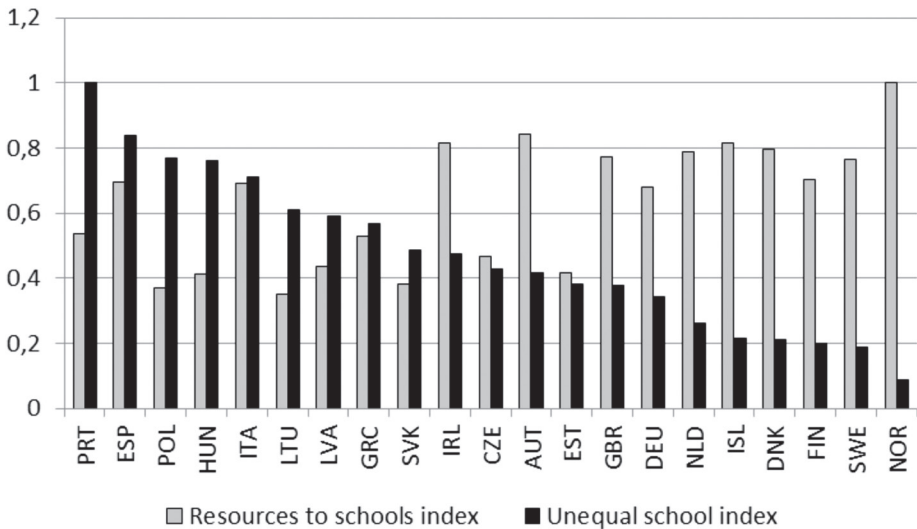


Notes: Normalized index obtained by PCA, data from Appendix 1, and the authors' calculations. NLD – Netherlands, GBR – UK, IRL – Ireland, NOR – Norway, ISL – Island, FIN – Finland, POL – Poland, LTU – Lithuania, HUN – Hungary, EST – Estonia, LVA – Latvia, ITA – Italy, DNK – Denmark, SWE – Sweden, SVK – Slovakia, CZE – Czech Republic, PRT – Portugal, GRC – Greece, ESP – Spain, DEU – Germany, AUT – Austria, France is excluded due to missing values.

Figure 1 illustrates the bivariate relationship where the above average results are obtained both by countries with the least choice (e.g., Finland, Norway and Iceland) and with the highest choice scores (e.g., the Netherlands and the UK). As mentioned, Finland outperforms others by far. Estonia, among other post-Communist countries, remains in the middle range of choice countries, being the most successful in PISA among them. Other countries in-between, such as Portugal, Spain, Lithuania, Italy, and Greece, perform relatively poorly.

Figure 2 illustrates the other two indices, which show that countries with a more equal distribution of students by achievement levels somehow also have more substantial financial resources allocated to schools. At one extreme there are South-European countries followed by the new EU members, at the other extreme there are all Nordic countries.

Figure 2. Resources to schools and unequal school index



Notes: Both normalized indices obtained by PCA, based on authors' calculations. Data series available in Appendix 1. France is excluded due to missing values.

However, all the new Member States, including Estonia, have dedicated somewhat lower financial resources to the education procedure. At the same time Finland is outperformed by Sweden and Norway in equality and by many countries (i.e. Ireland, Austria, Netherlands, Island, Denmark, Sweden, and Norway) in resources.

Empirical quadratic form of the data (Fig. 1) will lead to the specification of the model:

$$Y_i^{PISA} = aX_i^\alpha + bQ_i^\beta + cZ_i^\gamma + e_i^u,$$

where Y_i^{PISA} is the average PISA results for country i , X_i for school choice index, Q_i is index measuring unequal distribution of educational opportunities of and Z_i is the index measuring monetary resources available to schools. Expected signs of coefficient are the following: $\alpha = 2$, $\beta = 2$ and $\gamma = 2$. Linear specification of the model will not allow measuring causal effect of the school choice over educational results, but rather conditional marginal effects:

$$\frac{dY}{dX} = 2aX; \quad \frac{dY}{dQ} = 2bQ; \quad \frac{dY}{dZ} = 2cZ.$$

The total derivative will allow making linearization of the equation:

$$dY = f_x dX + f_Q dQ + f_Z dz.$$

Variables and their scores indicated by the first principal component that are used for composing indices of unequal distribution of the educational opportunities and monetary resources available to schools are indicated in Appendix 2. Table 2 presents the naïve OLS regression results, in which unequal distribution of educational opportunities is indicated by the ‘unequal school index’ and monetary resources available to schools by the ‘school resources index’. Marginal effects indicating partial correlation are calculated as regression coefficients. Our major interest is the interaction variable (Models 3 and 4) indicating the effect of school choice and unequal schools simultaneously.

Table 2. OLS Regressions of PISA score on school choice

Independent variable:	(1)	(2)	(3)	(4)
	Dependent variable: PISA average index			
Constant	-1.080 (1.407)	1.111 (1.447)	2.818** (1.140)	-0.262 (0.243)
School choice index	1.738 (1,533)	-0.420 (1.532)	-2.769** (1.265)	-0.078 (0.254)
Unequal school index	0.179 (0,339)	-0.192 (0.291)	0.563* (0.272)	0.451*** (0.049)
School resources index		-0.010** (0,148)		0.672*** (0.029)
Interaction variable: School choice index × Unequal school index			-0.457** (0.188)	0.050 (0.040)
Number of observations	21	21	21	21
Adjusted R-squared	0.08	0.36	0.50	0.98

*** 99%, ** 95%, * significance level 90%, standard errors in parentheses. Cross-country analyses based on first principal components of factors related to school choice (12 variables), resources available to schools (3 variables) and equal educational opportunities (7 variables). Due to missing values France is left out from the analysis.

Model 1 indicates that in the simplest form neither ‘school choice’ nor ‘unequal schools’ are statistically significant in explaining educational returns. However, in Model 2, school resources index shows a marginal statistically significant effect but with an unexpected sign. Our main interest (Models 3 and 4) are much more clearly specified. Model 3 indicates that choice variable has a negative and significant effect to educational results. At the same time unequal school (the reverse is equal school) has a surprisingly positive but small significant effect, almost similar in size with the effect of interaction variable. Adding resources to the specification, Model 4, stresses its unexpected positive impact, and makes choice variable insignificant. Thus, the results show that school choice, independently, has an ambiguous effect on educational returns, or this effect is statistically insignificant. Therefore, we have weak evidence that choice can have a negative impact on educational returns. However, we have to bear in mind the limitations of our study related to the degrees of freedom and sample size in general.

4. Discussion and conclusions

School choice is present in more or less all European countries despite the different government models of public service delivery, for example quasi-market, unregulated or controlled type of models. The context of how the phenomenon of school choice has emerged varies as well. In some countries the policy of choice and competition, including school choice, has been the clearly managed policy direction and conscious policy tool to improve the quality of schools. In others, school choice has been a rather latent by-product in development, since families were given an opportunity to apply for a school other than the one allocated on the basis of their place of residence, and schools are able to take pupils from outside the catchment area. The principles of equal distribution of students according to their achievement levels, financial resources devoted to the education procedure or institutional context differ as well. It is noted that choice in quasi-markets is necessarily local, specific and complex. Specific contextual path-dependent legal and political legacies are apparent in our cases of Estonia and Finland.

Also, relying on the British experience, West (2006) and West *et al.* (2010) are convinced that admission should be at least the responsibility of the local authority; they should make decisions about who should be allocated to which schools on the basis of the expressed preferences of parents, and the admission criteria (priorities) of the school. The admission criteria need to be objective,

clear and fair. In addition, these criteria must diminish or abolish manipulation and strategic choice in addition to addressing social justice. West (2006) lists the priorities, such as distance, zone, siblings, but argues that this is not enough to guarantee the fairness of the system. Thus we advocate these kinds of choice systems that offer a moderated system of parental choice, in which choice is 'tempered' by social justice and equity considerations (e.g., socio-economic status, ability).

By the very nature of the limited degrees of freedom in cross-country identification, our analyses can at best reveal broad patterns. And at the very least, a great deal of details of specific implementation issues related to school choice policy application must therefore be left for national approaches. Finland runs a rather limited choice policy, with almost no admission by academic records, no standardized testing or league tables, outperforming all other educational systems in the EU by far. Estonia, being relatively successful among the post-Communist countries, is much more choice-oriented, though mostly in urban settings. Our comparative quantitative analysis indicates that choice can be harmful in combination with unequal educational opportunities or insignificant in the case of high financing of education and equal opportunities to students.

Our study has only limited policy implications due to the limitations discussed in the following paragraph. We show that school choice without equalizing political measures (e.g., a matching mechanism or quotas based on certain priorities for disadvantaged students) can be harmful. However, this negative effect is not originating from choice *per se*, but rather from policy design. It can also be hypothesized whether there are some sort of intrinsic cultural values for less choice and individual optimization, but for more equality which are shared mostly by the Finnish and are not inherent to Estonians. So the question about the mix of influences originating from formal (education policy) or informal (culture and values) institutions remains open for future research. However, formal institutions are more likely to change and thus reasonable choice policy that allows more equal access to the disadvantaged students is just the matter of political will. In addition, we can learn the lessons from the relatively well-performing 'choice countries' like Sweden, Germany and Hungary.

There are several counter-arguments and open questions related to our findings. First, if choice requires equal access for students to grant them equal educational opportunities then centralized assignment instead of school autonomy must be applied. The latter leads to the question whether central assignment and control makes all schools alike? Or even, if we managed to make all schools equally good, is there any meaningful choice? It is clear that elite *versus* non-elite is not

the variety we seek in a society; rather the question is: do we need to encourage the specialized character of the schools? Our Estonian and Finnish cases show that there is something inherent within the systems that under liberal policy rules and specialized classes can create a gradual change in the system causing segregation. Second, if all schools are not the same then alternative problems emerge. Spatially concentrated demand or the so-called residential choice can push up house prices⁸ and generate a correlation between poverty and distance from a good school. As Burgess and Briggs (2006) show, the most relevant part of the explicit assignment rules is the role of location. Thus, disadvantaged children may have a lower chance to go to good schools depending on their place of residence, because middle-class parents often work in city centers where the best schools are, and the cost of exercising choice (transport, information, and daycare) may be prohibitive. In a typical municipality in England a child from a poor family is half as likely to attend a good secondary school as a non-poor child (Burgess & Briggs, 2006, p. 23). Third, the centrally designed mechanism principles or assignment remain open—for example, the length of time on the waiting list, lottery (random assignment), siblings, distance, etc. Fourth, what kind of information about the quality of school must be provided for parental choice? In Finland's case, league tables are prohibited. Koning and van der Wiel (2010), Hastings and Weinstein (2008) show that the publication of school quality scores (league tables) significantly affect the school's demand. However, the effects are related to 'the willingness to travel' and, surprisingly, there are no differences in quality response depending on the socio-economic background (Koning & van der Wiel, 2010). The latter suggests that in some contexts publicly available quality information may not be that harmful.

In sum, to be more optimistic about the possibilities to answer at least some of the problems highlighted in the above section, we hope that more data will generate better research. More than 60 countries are planning to participate in the next round of PISA. This gives us hope that economic analyses of school choice yield enough observation or panel data to identify causal effects and get rid of the omitted variable bias.

⁸ Households are willing to pay approximately 1% more in house prices when the average performance of the local school increases by 5% (Bayer *et al.*, 2007).

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Appendix 1. Characteristics of school choice systems in 22 European countries

	SCHOOL CHOICE INDICATORS (PISA 2009)												INEQUALITY OF EDUCATION INDICATORS							SCHOOL RESOURCES INDICATORS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1)	(2)	(3)
	who have 3 or more choices of schools	who have 2 options of schools	who have no choice of schools	admitted by catchment area	admitted by academic record	grouped by ability	not grouped by ability	in public schools	in government-dependent schools	in independent private schools	assessed by standards and tests	in schools with public achievement data	Bini index	PISA ESC index (OECD average)	with immigrant background	% of students whose primary school attendance is below	with no pre-registered economic intake	with disadvantage economic intake	% of schools with socio-economic intake	Teachers' salaries after 15 years of experience to GDP per capita	GDP per capita in USD using PPP	Cumulative expenditure per student as a % of GDP (2007)
Austria	43.1	14.0	42.9	62.7	15.4	40.4	53.6	87.4	10.8	1.8	67.6	6.3	27	1.1	15.2	8.4	2.3	29.7	27.7	1.02	36839	2.65
Czech Republic	70.8	12.7	16.5	23.3	15.4	61.5	31.2	97.1	2.7	0.0	11.1	30.6	27	0.9	2.3	9.2	3.9	22.0	21.7	0.89	23995	1.87
Denmark	66.7	11.1	22.2	49.7	2.0	43.8	50.4	79.6	17.8	2.6	3.4	45.3	23	1.3	8.6	7.2	2.2	18.6	21.4	1.16	36326	2.41
Estonia	57.5	23.7	18.8	57.6	26.8	44.2	43.8	97.1	2.3	0.6	17.2	32.3	36	1.2	8.0	6.7	10.3	20.2	24.9	0.61	20620	2.09
Finland	43.9	13.6	42.5	74.5	0.8	56.2	42.5	96.1	3.9	0.0	1.5	2.5	27	1.4	2.6	3.9	5.0	15.9	21.6	0.61	35322	2.02
France	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	27	0.9	13.1	13.9	1.7	29.7	26.2	1.07	32495	2.30
Germany	64.1	17.2	18.7	60.9	43.5	39.6	49.4	96.0	4.0	0.0	60.0	10.6	30	1.2	17.6	8.2	4.9	24.9	27.1	1.55	34683	1.82
Greece	40.1	19.7	40.2	88.0	0.0	14.4	85.2	96.6	0.0	3.4	34.9	31.3	32	1.0	9.0	17.7	5.4	24.6	26.5	1.13	27793	1.74
Hungary	57.9	22.1	20.0	68.0	3.0	64.8	32.3	88.4	11.5	0.1	23.9	33.2	29	0.8	2.1	19.1	1.4	33.0	34.3	0.78	18763	2.36
Iceland	35.8	15.0	49.2	64.4	0.0	63.4	25.2	99.1	0.9	0.0	13.7	22.5	28	1.7	2.4	3.5	3.0	20.4	32.4	0.74	36325	2.61
Ireland	70.3	11.5	18.2	32.9	11.6	87.3	3.6	43.4	49.5	7.1	35.0	18.7	33	1.1	8.3	10.4	17.4	24.6	20.1	1.26	44381	1.71
Italy	78.2	9.9	11.9	33.4	19.6	41.7	44.4	94.7	1.9	3.4	29.2	30.3	25	0.9	5.6	21.4	5.2	32.2	30.4	1.01	31016	2.49
Netherlands	76.2	21.0	2.8	18.9	76.0	36.2	19.8	35.3	64.7	0.0	13.4	64.5	27	1.3	12.1	6.5	3.5	21.5	23.7	1.14	39594	2.03
Norway	22.3	17.8	59.9	71.1	1.6	68.8	26.6	98.6	1.4	0.0	4.7	58.1	28	1.5	6.8	2.4	9.3	12.4	16.1	0.66	53672	1.89
Poland	43.4	24.2	32.4	81.3	14.1	42.2	54.2	97.9	0.6	1.5	3.2	53.4	37	0.7	0.0	20.7	2.3	30.0	19.3	0.84	16312	2.45
Portugal	57.4	22.0	20.6	66.7	1.9	23.8	68.5	86.1	8.8	5.1	12.1	30.2	38	0.7	5.5	33.5	19.1	32.2	23.5	1.55	22638	2.51
Slovak Republic	79.0	14.4	6.6	41.3	7.3	66.2	26.6	91.0	9.0	0.0	6.4	62.8	26	0.9	0.5	10.4	5.0	24.3	23.5	1.18	20270	1.59
Spain	65.0	14.6	20.4	65.8	1.1	53.6	39.6	69.1	25.7	5.2	71.1	7.8	32	0.7	9.5	29.0	4.6	31.9	24.4	1.36	31469	2.36
Sweden	52.1	17.2	30.7	49.6	0.6	65.5	25.8	90.0	10.0	0.0	3.4	61.1	23	1.3	11.7	5.1	9.8	19.8	19.6	0.9	36785	2.25
United Kingdom	78.0	10.9	11.1	26.8	3.0	91.5	0.9	93.7	0.0	6.3	32.5	80.4	34	1.2	10.6	5.6	5.8	26.5	23.4	1.26	34957	2.43
Latvia	69.3	19.8	10.9	20.0	23.5	34.6	55.4	99.2	0.5	0.3	3.9	25.1	36	0.9	4.5 n.a.	n.a.	21.5	24.7	25.8	0.6	n.a.	n.a.
Lithuania	55.1	25.4	19.5	45.6	11.1	62.0	23.0	95.6	0.4	0.0	14.9	25.0	33	1.0	1.7 n.a.	n.a.	37.6	24.3	26.3	0.6	n.a.	n.a.

Appendix 2. Results of the principal component analyses

School choice index		Expected sign	First component
1.	who have 3 or more choices of schools	+	0.41
2.	who have 2 options of schools	+	-0.16
3.	who have no choice	-	-0.38
4.	admitted by catchment area	-	-0.41
5.	admitted by academic record	+	0.25
6.	grouped by ability	+	0.18
7.	not grouped by ability	-	-0.31
8.	in public schools	-	-0.36
9.	in government-dependent private schools	+	0.25
10.	in independent private schools	+	0.15
11.	assessed by standardised tests	+	0.04
12.	in schools with public achievement data	+	0.15

Unequal school index		Expected sign	First component
1.	Gini index	+	0.3553
2.	PISA ESCS index	-	-0.5209
3.	with immigrant background	-	-0.1491
4.	whose ESCS index is below 1	+	0.5132
5.	with no pre-primary school attendance	+	0.1441
6.	with disadvantaged socio-economic intake	+	0.5086
7.	with advantaged socio-economic intake	+	0.1936

School resources index		Expected sign	First component
1.	Teachers salaries after 15 years of experience to GDP per capita	+	0.0848
2.	Cumulative expenditure per student aged 6-15 per school	+	0.7013
3.	GDP per capita 2007 (USD, PPP)	+	0.7078