

School Choice and Prep-schooling in Estonia: Current Segregative Mechanism to the Social Trap

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Abstract

We justify that the education of the students is not and should not be organized in market-like institution. For this we show that the current school choice mechanism in Estonia creates ‘run to prep-schools’ to the over-demanded or so called elite-schools. Latter is socially wasteful and creates social traps – parents have strictly dominant strategy to make their children to participate in prep-schools, creating social waste and being at the same time trapped into Pareto inefficient outcomes. Empirical logistical regression model assures that under competitive entrance and unregulated ambiguous admission criteria family background characteristics determine the success of admission to high reputation schools.

1. Introduction

Starting with Friedman (1962, 1955) school choice has been a widely discussed topic in education. It means giving parents the opportunity to choose the school for their children. Thus, the traditional problem handled under the heading “school choice” was related to private schools as educational providers and government funded voucher systems to support students with different background to be admitted into these schools. Sometimes school choice is still reduced to the question of the magnitude and state financing of private schools in Europe (Schuetz et al. 2008) or efficiency of voucher systems in USA (Miron et al. 2008). More often the policy research in education is triggered by the wave of decentralization of education as a part of a bigger movement in New Public Management (NPM) in late 80’s / early 90’s. In this context the school choice problem points to the reforms which gave parents the right to influence decisions concerning the allocation of pupils to public-sector schools. This development is driven in part at least by a neo-liberal, market based ideology, which assumes that increased competition will generate the incentives that will improve schools/pupil outcomes.

We take wider approach and consider school choice problem as an allocation problem, i.e. school choice as an enrollment problem, which is related to admission models and selection criteria. Generally speaking, these models can be scaled – one extreme is strict centralized rule which allocates students to schools on a basis of residence (catchment area division); and the other extreme is open enrollment under certain school specific criteria. Under most soviet regimes, including Estonia, children were for a long time centrally enrolled to neighborhood schools. In such catchment or zoned mechanism limited amount of choice is allowed only if it is justified by personal or family needs and it must be initiated by parents. Recently, alongside with market-oriented reforms, more countries employ school choice programs – school authorities take into account preferences of students and that of their parents. The school choice problem, what we are after, emerges in case of over-demanded schools.

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Many authors (e.g. Woessmann et al. 2009; Woessmann 2008, Betts and Roemer 2007) agree that the educational achievement of students should be independent of their family socioeconomic background. In this concept the educational inequality should be tolerated only if it results from differences in effort, not if it reflects circumstances that are beyond a person's control – including the socioeconomic background of their parents, peer effects or teacher effects. At the same time, education policy has shifted more towards choice policies in the European systems; by aiming for efficiency it has unintentionally created more inequality. The effect of the choice on equality is hotly debated in empirical and theoretical literature. It is shown in many cases (Germany (Riedel et al. 2009), various US cities (Burgess and Briggs 2006; Bifulco et al. 2009), England (West 2006; Burgess et al. 2006), and even Finland (Seppänen 2003) that choice tends to cumulate better socio-economic background students into certain schools, creating not only positive peer effects, but also a negative externality for the rest of students. Uncontrolled choice has increased ethnic and social segregation that can cause even more social costs than residential segregation (Bifulco et al. 2009). Furthermore, due to limited economic, cultural and social resources school choice tends to constrain disadvantaged families from practicing choice.

Thus, the distribution of students amongst schools is fundamental to concerns about equality of educational opportunity. The term 'controlled choice' is quite prevalent in latest work about school choice (Cobb and Glass 2009; West et al. 2010) stressing the potential discriminating aspect related to that phenomenon, and arguing that besides the claim that admissions criteria should be objective, clear and fair, the admissions system itself should address issues of equity and social justice (West 2006).

Some authors (Woessmann et al. 2009; Le Grand 2007; Betts, Loveless 2005) have been optimistic about the possibility of designing the workable choice policy, i.e. by taking into account the theory and cross-country evidence it is possible to determine conditions that a policy based on choice and competition needs to fulfill to meet the efficiency and equity criteria. Le Grand (2007) argues that there are at least three such criteria in which the choice based system functions better. First, increasing the ability of users to make choices (e.g. parents must be properly informed about the quality of the alternatives, supportive transportation); second, decreasing the ability of providers to make choices (e.g. to avoid cream-skimming it is important to restrict the ability of the school to make its own admissions decisions and should be compelled to take pupils from a range of backgrounds by a banding or quota system instead or by lottery); and third, widening the extent of competition (competition must be real).

The problems of current Estonian education system, having its roots in both the elitist pre-World War II and the egalitarian soviet post-World War II, is related to concentration of high-SES families into an oasis of limited number of downtown schools. An increasing degree of families are investing more time and other limited resources into the pre-training processes of their children. Moreover, we see that schools are increasingly selective in entrance using aptitude tests. Our empirics, survey data collected from 880 parents about their background characteristics and preferences, indicate that it is up to six times more probable from highest-income family to get accepted to these over-demanded schools than from lowest-income family. We state that these tendencies have been the result of recent amendments of policy towards more choice, allowing school autonomy in selecting their intake, without any centrally designed or controlled criteria.

So, we are talking about choice within publicly funded system. We are focusing on transition from kindergarten to primary school, for children at the age of seven. We rely on methodological individualism in studying early education choices. Although most research to date indicates a positive relationship between educational investments and economic growth, we demonstrate quite the opposite. We find that parents' investment decisions regarding their children's early education can create social waste.

The organization of the rest of the paper is as follows: In section 2 we introduce the current school choice mechanism in Estonia. In Section 3 we introduce 'prep-school run' model by using normal form game. In Section 4 we introduce the findings of logistic regression analyses to indicate the segregation effect related to today's Estonian school choice model; in Section 5, we conclude.

2. Current school choice mechanism in Estonia

Traditionally (during the soviet period) children were assigned to public schools according to where they lived. Even under this system, which continued to exist also in early nineties, some parents (e.g. the wealthiest or perceived elite) had some school choice. This kind of school choice meant the ability to move to the area with good schools, or 'buying' the enrollment by gifts or money, using acquaintances or finding some other loopholes in the system. There were also schools or specialized classes which conducted ability tests in the entrance.

After the early nineties the 'inherited', partly opaque system became more diverse. Legal amendments coming along with liberalization, gave parents the right to choose the school. However, the schools were obliged to ensure a study place for each student inside the catchment area, although the parents had an opportunity to choose a school if there were vacant places in the school they wished their child to attend (Basic Schools and Upper Secondary Schools Act, 1993). In addition, capital city of Estonia has used simultaneously both inter-district and intra-district school choice practices since 1993. This distinction followed basically 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 the specific geographic catchment area, there were and still are municipal policies that allow some comprehensive schools to select the students. The selection is usually justified by special studies (specialization track).

The admission mechanism to the over-demanded elite 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, only restriction in the case of some schools is residence. So, inter-district schools can have one additional admission criterion – family must show 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. These prep-schools are almost school-year-long courses offered for money, where the student candidates are drilled for the entrance tests. The study of Kukk and Talts (2009) showed that the ideology which can be called 'the cult of success' is shared among parents in general and thus parents are more than willing to participate in prep-schools in addition to public preparatory courses in the kindergartens. In some cases it goes to extremes as some parents enroll

their children in more than one prep-school or employ private tutors from so called elite-schools (elite-schools hereinafter). Children are thus pre-trained in ‘measurable skills’ like mathematics and reading and writing mostly, with less or no attention paid to social skills (Koop 2006). The selection of pupils according to ability or aptitude tests for primary schools is a rare practice in Europe. Usually selection takes place before transferring to the secondary schools (at the age of eleven), which is not the case here. Moreover, oversubscription criteria are in some cases centrally designed by government or municipality (West et al. 2010, Hirsch 2006). There is no such practice in Estonia.

8 of the schools (out of 56) in the capital city conducting ability tests and high selection at the entrance can be considered elite. Most of the elite-school graduates continue in publicly financed places in universities in Estonia or obtain scholarships to the universities abroad. 45% (authors’ analyses based on admission information of 2011, gathered from universities) of publicly financed places are occupied by the students of elite schools, meaning that it is 5 times more probable for elite-school graduate to obtain public education in a university compared to a ‘regular’ student. League tables listing state average exam results are public, all elite-schools triumph there in the top positions.

The new Basic Schools and Upper Secondary Schools Act (2010) was initiated to regulate the system and to apply rules to calm the situation down. However, the current formulation is not explicit enough to guarantee less manipulation and more efficiency in the future. Municipalities are about to formulate new mechanisms to harmonise with the new legal frame. At least in case of the capital city, Tallinn, the prep-schooling phenomenon has not diminished and the testing of 7-years is still prevailing in oversubscribed schools.

In general, current mechanism can be described as market-like mechanism, because there is no transparent admission policy (there are school specific entrance tests without clear prior requirements), there is no clear transfer policy, and the price of prep-schools is determined by market forces. Consequently, we may say, students and mostly their parents are forced to play complicated admission games. We name this ‘admission game’ that people play in most of the elite schools in Estonia ‘prep-school run’, meaning that for parents it is a rational choice to train their children additionally for school-specific admission test.

3. ‘Prep-school Run’ game

A preschool in the education-studies literature (Deming 2009; Garces et al. 2002; Currie 2001, 2000; Karoly et al. 1998, Reynolds 1998), is perceived as the most important political and institutional tool to adjust long-term inequalities created by socio-economic status of the parents. Aforementioned studies show that those who attend preschools (Head Start, Perry Preschool) are relative to their siblings who did not attend preschools, significantly more likely to complete high school, attend college and possibly have higher earnings throughout their lives. It is important to stress that preschool has all these valuable effects only for low-income, low-social status children, who participated in quality education programs prior to entering formal schooling. In our case, preschool (which we termed prep-school to stress the difference) is a totally different phenomenon – it is a preparatory for admissions to competitive elite-schools. Of course it may be argued, that attending prep-school is an investment into human capital even if this will not result in admission to the top schools. However it is not our

aim to prove, but we assume that increasing competition in primary education may be counterproductive. Our argument is supported by economists (Bound et al. 2009, Holmstrom and Milgrom 1991) and in Estonia, also by educational researchers (Kukk and Talts 2009). Time spent in test preparation in prep-school class has little to do with human capital creation. Also, it may be that children learn less under heavy pressure (Ariely et al. 2009), and there is also possible disappointment and humiliation related to unsuccessful admission tests.

The high stakes involved in admission naturally lead parent to game the system, and we will show that this behavior is self-enforcing. To the extent the admission process is seen as a process which can be controlled by appropriate strategy, the parents will quickly learn one.

	<i>P</i>	<i>NP</i>
<i>P</i>	$\frac{b_e+b_t-c_0}{2} - c; \frac{b_e+b_t-c_0}{2} - c$	$b_e - c; b_t - c_0$
<i>NP</i>	$b_t - c_0; b_e - c$	$b_t; b_t$

Figure 1: Prep-school run game

In Figure 1, *P* stands for the player's choice to participate in 'prep-school run' and *NP* is the opposite choice not to participate. c_0 is opportunity cost from social inequality (having a lower position in socio-economic ranking); b_e discounted benefit from repetitive game, assuming that $b_e = \frac{u}{1-\delta}$, where u is one stage payoff from obtaining elite-school educational return and δ is discount rate; c is the cost of attending prep-school (direct and opportunity costs); b_t discounted benefit from repetitive game, assuming that $b_t = \frac{v}{1-\delta}$, where v is one stage payoff from not obtaining elite-school educational return and δ is discount rate. It is assumed that $b_e - c > b_t$ and in the case of both players choosing the strategy *P*, the payoff is indeterminate and can be characterised by total randomisation, meaning that players are facing the lottery $L = \{b_e - c, b_t; 0.5, 0.5\}$, but have to pay the costs of the prep-school c . Thus it can be indicated that $b_t - c_0 < \frac{b_e+b_t-c_0}{2} - c < b_t$.

Our 'prep-school game' has only one Nash equilibrium strategy profile $\{P, P\}$, indicating that both players have dominated strategy *NP*, thus they play dominant *P* (specified by grey in Figure 1). This equilibrium has certain characteristics. First, it is rational from players' perspective to choose 'Prep-school Run'. Second, if everybody will run, then the ultimate outcome is Pareto inferior to the players, meaning that $\frac{b_e+b_t-c_0}{2} - c < b_t$. Total waste for the society compared to the situation where there is no elite prep-school is $W = \frac{n}{2}(b_t - b_e + 2c + c_0)$, where W stands for aggregate waste and n for the number of families engaged in 'Prep-school Run'.

Also it is worth highlighting that prep-school is costly, and not all parents can afford this 'appropriate strategy'. Thus we may assume that current school choice mechanism creates at least some degree of persistence of earnings across generations, which is the next section's aim to indicate.

4. Empirics

Our data originate from survey data gathered by authors about background characteristics of 880 enrolled students collected under the ESCM² project in spring 2012. This dataset allows us to concentrate on the relationship between final allocation and background characteristics.

The survey was targeted to all primary school parents in Tallinn; 31 schools participated which is approximately 20% of all schools in Tallinn. The number of final respondents (parents) was 880. Approximately 70% of all respondents attended prep-school and were tested for admission into the so called elite-schools.

We conduct analyses in two separate models; in Model 1 we include all respondents, in Model 2 only those respondents who participated in entrance tests of elite schools. The dependent variable is acceptance into elite-school. Included independent variables are: prep-school attendance, parents' higher education, parents' income, cultural capital. Independent variables are included by blocks to check the model fit. Only the variables which passed the model fit test, i.e. remained significant while new independent variables were added, are presented in Tables (the professional status of parents for instance did not pass the significance test).

For showing the relationship between background characteristics and elite school admission we use odd ratios. We are reporting the chances of being accepted in elite schools influenced by different factors in both models in Table 1 and Table 2.

Table 1: Logg-odds ratios, Model 1: all respondents (870 included into analyses)

Factors to influence chances of acceptance into elite school

Dependent variable: elite school	step 1		step 2		step 3		step 4	
	B	Exp (B)	B	Exp (B)	B	Exp (B)	B	Exp (B)
1) Preschool attendance	0,65***	1,921	0,54***	1,716	0,55***	1,728	0,528***	1,695
2) Higher education:								
mother			1,06***	2,887	0,93***	2,533	0,92***	2,5
father			0,66***	1,925	0,45***	1,569	0,370**	1,448
3) Income (ref ...-300 net per family member)								
300-500					0,74**	2,101	0,752**	2,121
500-800					1,28***	3,597	1,3***	3,655
800-1300					1,05***	2,867	1,1***	2,966
1300 and more					1,75***	5,773	1,72***	5,607
4) High cultural capital							0,744***	2,104
-2LL / Nagelkerke	961,764 / 0,24		886,079 / 0,148		856,254 / 0,194		837,158 / 0,223	

Significance level: *0,05<p<0,1; **0,01<p<0,05; ***p<0,01

Results indicate that the prep-school attendees have approximately 2 times (Exp(B) = 1,695-1,921) higher chances of getting accepted to elite school compared for those who didn't. This result is consistent with our 'prep-school run' model in Figure 1. However, controlled by parents' education (step 2) diminishes the prep-school effect moderately and mothers' higher education turns out to be significant influencer in increasing the chances of getting accepted into elite school. Adding the income variable modifies the model fit and indicates the importance of high income in getting accepted in elite-schools (it is 5,6 times higher chance to be accepted from highest income quintile

² ETF 8997 on school choice mechanisms financed by the Estonian Research Foundation.

compared to lowest). Finally we add the variable illustrating the cultural capital (measured by the habit to ‘consume’ scientific or cultural specialised journals which gives two times higher chances to get into elite schools).

Tabel 2: Logg-odds ratios, Model 2: those who participated entrance test (530 included into analyses)

Factors to influence chances of acceptance into elite school

Dependent variable: elite school	step 1		step 2		step 3		step 4	
	B	Exp (B)						
1) Preschool attendance	0,325	1,383	1,16	1,173	0,105	1,111	0,074	1,077
2) Higher education:								
mother			0,975***	2,651	0,870***	2,388	0,871***	2,389
father			0,457**	1,580	0,232	1,261	0,157	1,170
3) Income (ref ...-300 net per family member)								
300-500					0,951***	2,587	0,972***	2,642
500-800					1,22***	3,374	1,261***	3,528
800-1300					1,098***	2,999	1,147***	3,148
1300 and more					1,838***	6,287	1,830***	6,234
4) High cultural capital							0,669***	1,952
-2LL / Nagelkerke	756,184 / 0,006		713,497 / 0,104		689,171 / 0,157		676,201 / 0,184	

Significance level: *0,05≤p<0,1; **0,01≤p<0,05; ***p<0,01

Considering the Model 2 in which only the respondents who participated the entrance tests (to include only those who really wanted to get in elite schools) were included into the analyses, the most intriguing finding is that prep-schools’ effect loses its importance and the positive effect of higher income increases. The potential interpretation is that while the magnitude of prep-school attendance is increasing, the prep-school run has ever-decreasing ability to guarantee the admittance into elite-school and in case of harsh competition and ambiguous rules, the critical criteria is something else. This finding is completely consistent with our prep-school run model. The importance of high income in influencing the chances of being accepted into elite school is alarming in many senses, especially in creating segregation effect of Estonian school choice model.

5. Conclusions

School choice refers to students’ and families’ choice over school, but in Estonia it has evolved to the market-like mechanism where schools choose students or families. Current division of inter-district and intra-district schools is not justified. Also, we showed that the market-like mechanism for allocation of seats in the elite schools creates Pareto inefficient allocation of the resources, so everybody can be better off if there is no competition over entry.

Empirical logistical regression model assured that under competitive entrance and unregulated ambiguous admission criteria family background characteristics determine the success of admission to high reputation schools. As the distribution of students amongst schools is fundamental to concerns about equality of educational opportunity, we consider our findings alarming.

Searching for an alternative mechanism we don’t see other alternative than to give up the competitive nature of the school entrance (abolish ability and aptitude tests) and any restrictions to parental choice. In searching for alternative the mechanism design literature (see Erdil and Ergin 2008; Pathak and Sönmez 2008 for instance) is promising.

Long-run policy discussion must address the question of dissolution of the ‘quality’ differences between primary schools. Is the question of fair allocation of resources between schools – like premises, human capital of teachers; or should we compensate weaker schools for their disadvantaged position? There are some proposed political measures – (a) lottery assigning the teachers for certain years; (b) lottery assigning the principals for certain years; (c) compensation for perception based discrimination (e.g. more investments in buildings, more extra curriculum publicly provided courses, more facilities like gyms, music rooms, theatre rooms, swimming pools etc. for disadvantaged schools).

Finally, although school choice problem differs from college admission problem because here the only strategic players are the families and schools are merely objects, we want to open the discussion in college and university choice mechanisms where two-sided mechanism can be applied. Also, we encourage the discussion about kindergarten admission, where the current mechanism is almost as opaque and open to manipulation as current primary school choice mechanism. In current kindergarten admission it is difficult to justify limited number of choices, importance of the timing of the birth and the fact that proximity and siblings are not considered.

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